KURUKSHETRA UNIVERSITY KURUKSHETRA

Five Years Integrated
M. Sc. Engineering Physics (3 Years BSc+2Years M.Sc.)
Under CBCS-LOCF

(Effective from the Academic Session 2020-21 in phase manner)

Department of Physics
INSTITUTE OF INTEGRATED & HONORS STUDIES
Kurukshetra University
Kurukshetra - 136 119
Haryana (INDIA)

Learning Outcomes-based Curriculum Framework
For
Five Year Integrated
M.Sc. Engineering Physics (3 Year BSc+2 Year M.Sc.)
(Effective from the Academic Session 2020-21 in phase manner in IIHS)

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Introduction:

M. Sc. Engineering Physics (5 years Integrated) was started way back in 2009 in the Physics Department, Institute of Integrated and Honors Studies (IIHS) of Kurukshetra University on the advice of Higher Education Department Haryana. This course is of 5 Years (10 Semesters). ***After completion of 3 years (6 Semesters), students will be awarded B. Sc. Engineering Physics which is equivalent to B. Sc. (Non-Medical).*** Next 2 years (4 semesters) course is equivalent to M.Sc. Physics. The programme was prepared by the faculty of Physical Sciences of Kurukshetra University following the guidelines of the model curriculum developed by UGC, New Delhi and looking the need of the students to complete with recent trends in higher education at national and international level. The same has been finalized by inviting comments, suggestions from experts in individual from universities, institutes, industries and alumni of the institute.

Following the guidelines of UGC, New Delhi and looking at the better employability, entrepreneurship possibilities and also to enhance the latent skills of the students Kurukshetra University has adopted the ***Choice Based Credit System* (CBCS)** system for assessing performance of the students from the academic year 2019-2020. The CBCS system offers flexibility to the students in choosing courses of their own choice from the exhaustive list comprising core, elective, skill based, specializations and minor components that are evaluated following the grading system. The university shall be implementing the revised syllabus of M. Sc. Engineering Physics (5 years Integrated) First Year from the coming academic year i.e., 2020-2021. This document provides detailed information on methodology of choosing different components of M. Sc. Engineering Physics (5 years Integrated) First to Fifth Year (Semester I through X) theory and practical courses.

Master of Science (M. Sc.) Engineering Physics (5 years Integrated) is a post-graduation course of Kurukshetra University. The Credit Based Grading System (CBCS) adopted under this course enables the students to develop a strong foundation of the fundamental Physics and also elevates their knowledge base to apply these foundations to the applied and advanced electives, specializations of their own choices. The students pursuing this course will develop foundation aspects of Physics,

Chemistry and Mathematics during the first 3 years. In the next 2 years, the students pursuing the course will develop in-depth understanding of various aspects of the core subjects of Physics by developing the deeper understanding level of different analogies, laws of the Nature through the subjects like classical mechanics, quantum mechanics, electrodynamics, statistical mechanics, condensed matter physics, atomic and molecular physics, nuclear physics, etc. The course also helps the students in enhancing their analytical skill through the embedded component of the problem solving skills, seminar activities and hands-on and minds-in activities of the course. The courses offered by the University are of student-centric nature and help them to understand the basic laws of nature and develop necessary skills to apply them to the advanced areas of studies in science and engineering.

There are **core or mandatory courses (theory and laboratory courses)** meant to provide adequate knowledge on various aspects of physics discipline and to prepare the students for applying them for advanced courses. In addition, there will be skill based elective (specialization) as well as few open elective courses enabling cross-discipline movement to the students. The skill based elective courses are of more advanced nature and help the students to develop their skills in specific fields through more of the hands-on activities. The details of the courses and activities are given with detailed syllabus.

Objectives of the M. Sc. Engineering Physics program:

1. To develop skills of critical thinking, hypothesis building and applying the scientific method of physics concepts, theoretical models and laboratory experiments
2. To develop problem solving skill for identifying and formulating problems independently and creatively employing the theoretical and/or experimental methods that he has acquired during the course
3. To train the students with a working knowledge of experimental/computational techniques and instrumentation required to work independently in research and industrial environments
4. To acquire advanced knowledge in specialized areas in physics that is in tune with the front-line research in physics
5. To prepare the students to successfully compete for current employment opportunities.

Scheme and Syllabi of five years integrated
M. Sc. ENGINEERING PHYSICS Programme
(From 1st to 6th semester)
Under CBCS-LOCF

(w. e. f. from the Academic Session 2020-21 in phase manner)

(After 3 Years / 6 Semesters, students may be awarded B. Sc. -Engineering Physics Degree)

1st Year (1st and 2nd semesters)

1st Semester

Course Type & No.	Course Code	Course Nomenclature	Credits (L+T+P)	Teaching Hours per week	Maximum Marks			Duration of Examination (Hrs.)
					Internal Assessment*	End-semester Examination	Total	
AECC Course-I Communication Skills	EVS- 101	Environmental Science	2+0+0	2	10	40	50	3
Core Course-I (Physics)	EP-101	Mechanics-I	3+0+0	3	15	60	75	3
Core Course-II (Physics)	EP-102	Mechanics-II	3+0+0	3	15	60	75	3
Core Course-III (Physics)	EP-103	Physics Practical-I	0+0+2	4	----------	50	50	3
Core Course-I (Mathematics)	MT-101	Calculus	3+0+0	3	15	60	75	3
Core Course-II (Mathematics)	MT-102	Algebra and Number Theory	3+0+0	3	15	60	75	3
Core Course-III (Mathematics)	MT-103	Mathematics Practical-I	0+0+2	4	----------	50	50	3
Core Course-I (Chemistry)	CH-101	Inorganic chemistry-I	2+0+0	2	10	40	50	3
Core Course-II (Chemistry)	CH-102	Physical chemistry-I	2+0+0	2	10	40	50	3
Core Course-III (Chemistry)	CH-103	Organic chemistry-I	2+0+0	2	10	40	50	3
Core Course-IV (Chemistry)	CH-104	Chemistry practical-I	0+0+2	4	----------	50	50	6
Total Credits/Marks in semester-I			**26**				**650**	

*Internal Assessment marks

20% marks in each theory paper shall be reserved for Internal Assessment. The following parameters (with weightage of each) forming the basis of award of Internal Assessment:-

(i) One test/Seminar for each paper (one period duration)	: 50%
(ii) One Assignment for each paper	: 25%
(iii) Attendance	: 25%

2nd Semester

Course Type & No.	Course Code	Course Nomenclature	Credits (L+T+P)	Teaching Hours per week	Maximum Marks			Duration of Examination (Hrs.)
					Internal Assessment*	End-semester Examination	Total	
AECC Course-II Communication Skills	ENG-201	English Communication	2+0+0	2#	10	40	50	3
Core Course-IV (Physics)	EP-201	Electricity, Magnetism & E.M. Theory	3+0+0	3	15	60	75	3
Core Course-V (Physics)	EP-202	Electronics	3+0+0	3	15	60	75	3
Core Course-VI (Physics)	EP-203	Physics Practical-II	0+0+2	4	---------	50	50	3
Core Course-IV (Mathematics)	MT-201	Advanced Calculus	3+0+0	3	15	60	75	3
Core Course-V (Mathematics)	MT-202	Differential Equations	3+0+0	3	15	60	75	3
Core Course-VI (Mathematics)	MT-203	Mathematics Practical-II	0+0+2	4	----------	50	50	3
Core Course-V (Chemistry)	CH-201	Inorganic chemistry-II	2+0+0	2	10	40	50	3
Core Course-VI (Chemistry)	CH-202	Physical chemistry-II	2+0+0	2	10	40	50	3
Core Course-VII (Chemistry)	CH-203	Organic chemistry-II	2+0+0	2	10	40	50	3
Core Course-VIII (Chemistry)	CH-204	Chemistry practical-II	0+0+2	4	-------	50	50	6
Total Credits/Marks in semester-II			**26**				**650**	

#Workload for English: 1 hour for teaching theory/text and 1 hour for composition/ grammar for group of 20 (Twenty) students.

M. Sc. Engineering Physics
Semester-I
Subject: Environmental Studies
(Course Type- Ability Enhancement Compulsory Course, Course Code: EVS-101)
Nomenclature: Environmental Science
No. of credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hours

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 5 parts and the answer should be in brief but not in Yes/No.
3. Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.

Syllabus will be the same as for other UG courses as approved by the Board of Studies of the Department of Environmental Science, KUK

M. Sc. Engineering Physics
Semester-I
Subject: Physics
(Course Type- Core Course, Course Code: EP-101)
Nomenclature: Mechanics-I
No. of credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4. 20% numerical problems are to be set.
5. Use of scientific (non-programmable) calculator is allowed.

UNIT-I

ROTATIONAL MOTION

Rotation of rigid body, Moment of inertia, Torque, Angular momentum, Kinetic Energy of rotation. Theorem of perpendicular and Parallel axis (with proof), Moment of inertia of Ring, Disc, Rectangular lamina, Solid bar of rectangular cross section, Solid sphere, Hollow sphere, Spherical shell, Solid Cylinder and Hollow cylinder. Fly wheel, Moment of inertia of an irregular body, Acceleration of a body rolling down on an inclined plane.

(15 Lectures)

UNIT-II

ELASTICITY

Elasticity, Stress and Strain, Hooks law, Elastic constant and their relations, Poisson's ratio, Torsion of cylinder and twisting couple, determination of coefficient of modulus of rigidity for the material of wire by Maxwell's Needle, bending of beam (Bending moment and its magnitude), Cantilever and Centrally loaded beam, Determination of Young's modulus for

the material of the beam and Elastic constants for the material of the wire by Searle's method.

(15 Lectures)

UNIT-III

OSCILLATIONS

Review of SHM, Simple Harmonic Oscillations, Differential Equation of SHM and its solution. Kinetic Energy, Potential Energy and their space average, time average, total energy. Damped oscillations, forced oscillations, transient and steady state, sharpness of resonance, power dissipation and quality factor. **(15 Lectures)**

UNIT-IV

SURFACE TENSION

Surface Tension: Synclastic and anticlastic surface, excess pressure application to spherical drop and bubbles. Variation of Surface tension with temperature.

VISCOSITY

Kinematics of moving fluids: idea of compressible and incompressible fluids, equation of continuity, steamline and turbulent flow, Reynolds's number, Euler's equation, The special case of fluid statics $F = \Delta p$, Simple applications e.g. Pascal's law and Archimedes principle. Poiseuille's equation for flow of a viscous liquid through a capillary tube.

(15 Lectures)

CO No. **Course code (EP-101): Mechanics-I**

After successfully completing the course, student will be able to:

CO-1 Understand the application of both translational and rotational dynamics motions simultaneously in analyzing rolling with slipping. Write the expression for the moment of inertia about the given axis of symmetry for different uniform mass distributions.

CO-2 Understand the principles and basic terms related to elasticity through the study of Young Modulus and modulus of rigidity.

CO-3 Explain the phenomena of simple harmonic motion and the properties of systems executing such motions.

CO-4 Appreciate the concepts and Applications of surface tension and also be able to understand simple principles of fluid flow and different equations governing fluid dynamics.

REFERENCES

1. Mechanics "Berkeley Physics Course Vol. I", Charles Kittel, Tata McGraw-Hill
2. Elements of Properties of Matter, D.S. Mathur, S .Chand & Com. Pt. Ltd., New Delhi
3. Heat and Thermodynamics (5th Edition), Mark W. Zermansky

4. Physics, Resnick, Halliday & Walker, Wiley
5. Properties of Matter, R. Murgeshan, S. Chand & Com. Pt. Ltd., New Delhi

M. Sc. Engineering Physics
Semester-I
Subject: Physics
(Course Type- Core Course, Course Code: EP-102)
Nomenclature: Mechanics-II
No. of credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-
1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4. 20% numerical problems are to be set.
5. Use of scientific (non-programmable) calculator is allowed.

UNIT-I

BASIC CONCEPTS OF CLASSICAL MECHANICS

Mechanics of single and system of particles, Conversion law of linear momentum, Angular momentum and mechanical energy for a particle and a system of particles, Centre of Mass and equation of motion.

(15 Lectures)

UNIT-II

GENERALIZED NOTATIONS

Degrees of freedom and Generalized coordinates, Transformation equations, Generalized Displacement, Velocity, Acceleration, Momentum, Force and Potential, Hamilton's variational principle, Lagrange's equation of motion from Hamilton's principle, Linear Harmonic oscillator, Simple pendulum, Atwood's machine.

(15 Lectures)

UNIT-III

THEORY OF RELATIVITY-I

Frame of reference, limitation of Newton's law of motion, Inertial frame of reference, Galilean transformation, Frame of reference with linear acceleration, Classical relativity, Galilean invariance, Transformation equation for a frame of reference- inclined to an inertial frame and Rotating frame of reference, Non-inertial frames; The accelerated frame of reference and rotating frame of reference, Fundamental frame of reference, Michelson Morley's experiment.

(15 Lectures)

UNIT-IV

THEORY OF RELATIVITY-II

Special theory of relativity, Lorentz co-ordinate and physical significance of Lorentz invariance, Length Contraction, Time Dilation, Twin Paradox, Velocity addition theorem, Variation of mass with velocity, Mass energy equivalence, Transformation of relativistic momentum and energy, relation between relativistic momentum and energy, Mass, velocity, momentum and energy of zero rest mass.

(15 Lectures)

CO No. **Course code (EP-102): Mechanics-II**

After successfully completing the course, student will be able to:

CO-1 Learn the concept of conservation of energy, momentum, angular momentum and apply them to understand the basic problems in physics.

CO-2 Understand and explain the Hamilton's variational principle, derive Lagrange's equation of motion from Hamilton's principle and be able to apply these principles to derive the Lagrangian and Hamiltonian for various simple mechanical systems such as Linear Harmonic oscillator, Simple pendulum, Atwood's machine.

CO-3 Differentiate between inertial and Non-inertial frame of references and Describe how fictitious forces arise in a non-inertial frame. Understand the importance of Michelson Morley's experiment in reference to special theory of relativity.

CO-4 Describe special relativistic effects and their effects on the mass and energy of a moving object and appreciate the nuances and important outcomes of Special Theory of Relativity.

REFERENCES

1. Classical Mechanics by H. Goldstein (2nd Edition)
2. Berkeley Physics Course. Vol. 1. Mechanics, E.M. Purcell
3. Concepts of Modern Physics, Arthur Beiser
4. Mechanics, D.S. Mathur, S.Chand & Com. Pt. Ltd., New Delhi

5. Berkeley Physics Course. Vol. 1. Mechanics, Charles kittel, Walter D Knight, Malvin A Ruderman, Carel A Helmholz and Burton J Moyer, McGraw-Hill, New York

M. Sc. Engineering Physics
Semester-I
Subject: Physics
(Course Type- Core Course, Course Code: EP-103)
Nomenclature: Physics Practical-I
Credits: 2

Max. Marks: 50
Time: 3 hrs.

Special Note: -

1.Do any eight experiments from the given list of experiments.
2.The students are required to calculate the error involved in a particular experiment.
3.The Practical examination will be held in a single session of 3 hours.

Distribution of Marks:

Experiment	25 marks
Viva- voce	15 marks
Lab Record	10 marks
Total	50 marks

List of Experiments:

1. Measurement of Length (or diameter) using Vernier calliper, Screw Gauge & Travelling Microscope.
2. Moment of Inertia of a Fly Wheel
3. Moment of Inertia of irregular body using a Torsion Pendulum.
4. Surface Tension by Jaeger's Method.
5. Young Modulus by Bending of Beam.
6. Modulus of rigidity of material of wire by Maxwell's Needle.
7. Elastic constant by Searle's method.
8. Viscosity of water by its flow through a uniform capillary tube.
9. Acceleration due to Gravity 'g' by Bar pendulum.
10. To study the Motion of spring and calculate Spring constant & value of Acceleration due to Gravity.
11. To compare Moment of Inertia of a solid Sphere, Hollow Sphere and solid Disc of same mass with the help of Torsion Pendulum.

CO No.	Course code (EP-103) : Physics Practical-I
	After successfully completing the course, student will be able to:
CO-1	Hands on experience with different instruments and appreciate the beauty of different concepts and related experiments in Physics.
CO-2	Verify some fundamental principles, effects and concepts of physics through Experiments.
CO-3	perform experiments related to mechanics (compound pendulum), rotational dynamics (Flywheel), elastic properties (Young Modulus and Modulus of Rigidity) and fluid dynamics (verification of Stokes law, Searle method) etc.
CO-4	Learn to present observations, results and analysis in suitable and presentable form.

REFERENCES

1. B.Sc. Practical Physics, C.L. Arora, S. Chand Publisher, New Delhi
2. Advanced Level Practical Physics, M. Nelkon and Ogborn, Henemann Education Books Ltd., New Delhi
3. Practical Physics, S.S. Srivastava and M.K. Gupta, Atma Ram & Sons, Delhi
4. Practical Physics, S.L. Gupta and V. Kumar, Pragati Prakashan Meerut
5. Modern Approach to Practical Physics, R.K. Singla, Modern Publishers, Jalandhar
6. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, Asia Publishing House.

M. Sc. Engineering Physics
Semester – I
Subject: Mathematics
(Course Type-Core Course, Course Code: MT-101)
Nomenclature: (Calculus)
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. The examiner will set 8 questions asking two questions from each unit by taking course outcomes (COs) into consideration.
2. The examinee will be required to attempt 5 questions, selecting at least one question from each unit.

Unit-I:

ε-δ definition of limit and continuity of a real valued function, basic properties of limits, types of discontinuities. Differentiability of functions. Successive differentiation. Leibnitz theorem. Maclaurin and Taylor series expansions

Unit-II:

Tangents and normals (Cartesian and parametric equations). Asymptotes in Cartesian and

polar coordinates, intersection of a curve and its asymptotes. Curvature and radius of curvature of curves in Cartesian, polar and parametric forms. Newton's method. Radius of curvature for pedal curves. Centre of curvature. Circle of curvature. Evolutes and involutes.

Unit-III:

Tests for concavity and convexity. Points of inflexion. Multiple points. Cusps, nodes & conjugate points.

Reduction formulae. Rectification.

Unit-IV:

Quardrature, Sectorial area. Area bounded by closed curves. Volumes and surfaces of solids of revolution. Theorems of Pappu's and Guilden.

Course Outcomes: This course will enable the students to:

1. Calculate the limit of functions, examine the continuity of functions, understand differentiability of different type of functions, successive differentiation of functions and series expansions.
2. Understand concepts of tangents, normals, asymptotes, curvature, evolutes and involutes of a curve; the geometrical meanings of these terms and to solve related problems
3. Determine singular points of a curve and their types. To understand rectification of curves and to apply the reduction formulae.
4. Determine area bounded by curves and volumes and surface area of solids formed by revolution of curves

Recommended Text Books:

1. Howard Anton, I. Bivens & Stephan Davis (2016). *Calculus* (10th edition). Wiley India.
2. Gabriel Klambauer (1986). *Aspects of Calculus*. Springer-Verlag.
3. Wieslaw Krawcewicz & Bindhyachal Rai (2003). *Calculus with Maple Labs*. Narosa.
4. Gorakh Prasad (2016). *Differential Calculus* (19th edition). Pothishala Pvt. Ltd.
5. George B. Thomas Jr., Joel Hass, Christopher Heil & Maurice D. Weir (2018). *Thomas*' *Calculus* (14th edition). Pearson Education.
6. Monty J. Strauss, Gerald L. Bradley & Karl J. Smith (2011). *Calculus* (3rd edition). Pearson Education. Dorling Kindersley (India) Pvt. Ltd.

M. Sc. Engineering Physics
Semester – I
Subject: Mathematics
(Course Type-Core Course, Course Code: MT-102)
Nomenclature: Algebra and Number Theory
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. The examiner will set 8 questions asking two questions from each unit by taking course outcomes (COs) into consideration.
2. The examinee will be required to attempt 5 questions, selecting at least one question from each unit.

Unit–I:

Rank of a matrix. Row rank and column rank of a matrix. Eigen values, eigen vectors and the characteristic equation of a matrix. Minimal polynomial of a matrix. Cayley-Hamilton theorem and its use in finding the inverse of a matrix. Unitary and Orthogonal Matrices.

Unit–II:

Applications of matrices to a system of linear (both homogeneous and non–homogeneous) equations. Theorems on consistency of a system of linear equations.

Relations between the roots and coefficients of general polynomial equation in one variable. Solutions of polynomial equations having conditions on roots.

Unit–III:

Common roots and multiple roots. Nature of the roots of an equation Descarte's rule of signs. Solutions of cubic equations (Cardon's method). Biquadratic equations and their solutions.

Unit–IV:

Divisibility, Greatest Common Divisor (GCD), Least Common Multiple (LCM). Prime numbers, Fundamental Theorem of Arithemetic. Linear Congruences, Fermat's theorem. Wilson's theorem and its converse. Linear Diophanatine equations in two variables. Greatest integer function [x]. The number of divisors and the sum of divisors of a natural number n (The functions d(n) and $\sigma(n)$).

Course Outcomes: This course will enable the students to:

1. Determine rank of a matrix, eigen values, eigen vectors, characteristic equation and characteristic polynomial of square matrices. Understand unitary and orthogonal matrices and to solve related problems.
2. Find solution of homogeneous and non-homogeneous system of linear equations using matrices. Determine relation between roots and coefficients of a general polynomial equation.
3. Identify multiple roots. Application of Descarte's rule of sign. Solve cubic and biquadratic equations.
4. Understand the basic concepts of number theory and their applications in problem solving. Prove Fermat and Wilson's theorems and their applications.

Recommended Text Books:

1. A.I. Kostrikin (1984). *Introduction to Algebra*. Springer Verlag.
2. Bernard Kolman & David R. Hill (2003). *Introductory Linear Algebra with Applications* (7th edition). Pearson Education Pvt. Ltd. India.
3. S. H. Friedberg, A. L. Insel and L.E. Spence (2004). *Linear Algebra*, Prentice Hall of India Pvt. Ltd.
4. David C. Lay, Steven R. Lay & Judi J. McDonald (2016). *Linear Algebra and its Applications* (5th edition). Pearson Education Pvt. Ltd. India.
5. Gareth A. Jones & J. Mary Jones (2005). *Elementary Number Theo*ry. Springer.
6. Neville Robbins (2007). *Beginning Number Theory* (2nd edition). Narosa.
7. I. Niven (2012). *An Introduction to the Theory of Numbers* (5th edition). John Wiley & Sons.
8. H.S. Hall and S.R. Knight (2016). *Higher Algebra*, Arihant Publications.
9. Leonard Eugene Dickson (2009). *First Course in the Theory of Equations*. The project Gutenberg EBook (http://www.gutenberg.org/ebooks/29785)

M. Sc. Engineering Physics
Semester-I
Subject: Mathematics
(Course Type-Core Course, Course Code: MT-103)
Nomenclature: Mathematics practical-I
No. of Credits: 2

Max. Marks: 50
Time: 3 hrs.

Special Note: -

1. This course has two components, Problem Solving and Practical using MAXIMA software.
2. The examiner will set 4 questions at the time of practical examination asking two questions from the part (a) and two questions from the part (b) by taking course outcomes (COs) into consideration.
3. The examinee will be required to solve one problem from the part (a) and to execute one program successfully from the part (b).
4. The evaluation will be done on the basis of practical record, viva-voce, write up and execution of the program.
5. The Practical examination will be held in a single session of 3 hours.

Distribution of Marks:

Experiment	25 marks
Viva- voce	15 marks
Lab Record	10 marks
Total	50 marks

a) **Problem Solving**- Questions related to the following problems will be solved and record of those will be maintained in the Practical Notebook:

1. Problems of curve tracing when equation is given in Cartesian coordinates.
2. Problems of curve tracing when equation is given in parametric form.
3. Problems of curve tracing when equation is given in polar coordinates.
4. Problem solving of determination of length of a curve expressed in Cartesian coordinates.
5. Problem solving of determination of length of a curve expressed in polar coordinates.
6. Problems of determination of volume of solids generated by revolution of curves expressed in Cartesian coordinates.
7. Problems of determination of volume of solids generated by revolution of curves expressed in polar coordinates.
8. Problems of determination of volume of solids generated by revolution of curves expressed in parametric form.

9. Problems of solving cubic equations by Cardon's method.
10. Problems of solving biquadratic equations by Ferrari' method.

b) **Practicals with Free and Open Source Software (FOSS) Tools-** The following practicals will be done using MAXIMA Software and record of those will be maintained in the practical Note Book:

1. To simplify expression, factor expression, expand expression and to do trigonometric simplification and complex simplification by making use of MAXIMA.
2. To find derivatives of functions using MAXIMA.
3. To find indefinite and definite integrals of different functions using MAXIMA.
4. To find roots of algebraic equations using MAXIMA.
5. To find the value of a determinant using MAXIMA.
6. To compute inverse of a square matrix using MAXIMA.
7. To find Eigen values and Eigen vectors of a square matrix using MAXIMA.
8. To solve system of linear equations using MAXIMA.

Course Outcomes: This course will enable the students to:

1. Handle practical problems of tracing of curves when equations are given in Cartesian, polar coordinates or in parametric form.
2. Solve practical problems of finding length of given curves, calculating volume of solids generated by revolution of curves and solving cubic and biquadratic equations.
3. Have hand on experience to find derivative and integral of different functions and to solve algebraic equations by using built in functions of MAXIMA software.
4. Attain skills to find inverse, eigen values of matrices and to solve system of linear equations by using built in functions of MAXIMA software.

M. Sc. Engineering Physics
Semester – I
Subject: Chemistry
(Course Type-Core, Course Code: CH-101)
Nomenclature: Inorganic Chemistry-I
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

Section – A (15 hrs)

Atomic Structure

Idea of de Broglie matter waves, Heinsenberg's uncertainty principle, atomic orbitals, quantum numbers, radial and angular wave functions, normal and orthogonal wave functions, significance of Ψ and Ψ2, probability distribution curves, shapes of s, p, d, f orbitals, Aufbau and Pauli exclusion principles, Hund's multiplicity rules, Electronic configuration of elements, effective nuclear charge, Slater's rules.

Periodic table and atomic properties

Classification of periodic table into s, p, d, f blocks, atomic and ionic radii, ionisation energy, electron affinity and electronegativity definition, methods of determination or evaluation, trend in periodic table (in s and p-block elements), Pauling , Mulliken, Allred Rachow and Mulliken Jaffe's electronegativity scale, Sanderson's electron density ratio.

Section – B (15 hrs)

Covalent Bond

Valence bond theory (Heitler-London and Pauling approach) and its limitation, directional characteristics of covalent bond, various type of hybridisation and shapes of simple inorganic molecules and ions (BeF2, BF3, CH4, PF5, SF6, IF7,SO4-2, ClO4-1, NO3-1) valence shell electron pair repulsion (VSEPR) theory to NH3, H3O+, SF4, ClF3, H2O, SnCl2, ClO3-1 and ICl2-1. Molecular orbital theory of homonuclear (N2, O2) heteronuclear (CO and NO) diatomic molecules and ions, bond energy, bond angle, bond length and dipole moments, percentage ionic character from dipole moment and electronegativity difference.

Ionic Solids

Ionic structures (NaCl, CsCl, ZnS (Zinc blende), CaF2) size effects, radius ratio rule and its limitations, Madelung constant, Stoichiometric and Non stoichiometric defects in crystals, Lattice energy (mathematical derivation excluded) and Born- Haber cycle, Solvation energy and its relation with solubility of Ionic solids, Polarizing power and Polarisability of ions, Fajan's rule.

Course Outcomes:

CO1: States the postulates of quantum mechanics and Schrodinger equation to explain the structure of hydrogen atom

CO2: To study and explain the Radial and angular nodes and their significance in describing shapes of s,p and d orbitals

CO3: Know about Spin quantum numbers and magnetic quantum numbers and their significance.

CO4: Have knowledge about Electronic configuration, Effective nuclear charge and slater's rule

CO5: To learn about Ionic bonding and energy consideration in ionic bonding to Explain Lattice energy and solvation energy

CO6: To study Born-Lande equation and Born-Haber cycle, polarizing power and polarizability

CO7: To apply VSEPR theory in explaining shapes of some inorganic molecules and ions

CO8: Know about Rules of LCAO method, Bonding and antibonding molecular orbitals.

Reference Books:

- Lee, J.D. *Concise Inorganic Chemistry* ELBS, 1991.
- Cotton, F.A., Wilkinson, G. &Gaus, P.L. *Basic Inorganic Chemistry*, 3rd ed., Wiley.
- Douglas, B.E., McDaniel, D.H. & Alexander, J.J. *Concepts and Models in Inorganic Chemistry*, John Wiley & Sons.
- Huheey, J.E., Keiter, E.A., Keiter, R.L. & Medhi, O.K. *Inorganic Chemistry:Principles of Structure and Reactivity*, Pearson Education India, 2006.
- Pradeep's inorganic chemistry, Volume I
- R Chand, inorganic chemistry, Volume I
- Modern publications,inorganic chemistry, Volume I

M. Sc. Engineering Physics
Semester – I
Subject: Chemistry
(Course Type-Core, Course Code: CH-102)
Nomenclature: Physical Chemistry-I
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

Section–A (15 Hours)

Kinetic Theory of Gases

Postulates of Kinetic Theory of Gases and derivation of the kinetic gas equation,Deviation of real gases from ideal behaviour, compressibility factor, causes of deviation,Van derWaals equation of state for real gases. Boyle temperature(derivation not required). Critical phenomena, critical constants and their calculation from Van der Waals equation. Andrews isotherms of CO_2.Maxwell Boltzmann distribution laws of molecular velocities and molecular energies(graphic representation – derivation not required) and their importance.

Temperature dependence of these distributions. Most probable, average and root mean square velocities (no derivation). Collision number,collision frequency, collision diameter and mean free path of molecules.

Liquids

Structure of liquids, Surface tension and its determination using a stalagmometer. Viscosity of a liquid and determination of coefficient of viscosity using Ostwald viscometer. Effect of temperature on surface tension and coefficient of viscosity of a liquid (qualitative treatment only).

Section-B (15 Hours)

Solids

Forms of solids. Unit cells, crystal systems, Bravais lattice types and identification of lattice planes. Laws of Crystallography - Law of constancy of interfacial angles, Law of rational indices. Miller indices. Elementary idea of symmetry and symmetry elements, X–Ray diffraction by crystals, Bragg's law. Structures of NaCl, KCl and CsCl (qualitative treatment only). Defects in crystals. Glasses and liquid crystals.

Solutions and Colligative Properties

Methods of expressing concentrations of solutions, Ideal and non-ideal solutions, Recapitulation of Raoult's law and colligative properties, Thermodynamic derivation of relation between amount of solute and elevation in boiling point and depression in freezing point.Applications in calculating molar masses of normal, dissociated and associated solutes in solution.

Course Outcomes :

CO1: To learn about Role of temperature and pressure to establish the state of gases and describe the Concept of critical temperature, pressure and volume of real gases

CO2: To understand the Maxwell distribution law and various parameters associated with collisions ideal gas molecules

CO3: To study the Physical properties of liquids like surface tension, viscosity and their measurements

CO4: To understand the morphology of crystalline solids and have knowledge about various types of symmetries present in different solids

CO5: To be able to describe X-rays diffraction and Bragg's law

CO6: To have knowledge about solutions and colligative properties and their application in determining molar mass of solute.

Reference Books:

- Barrow, G.M. *Physical Chemistry* Tata McGraw-Hill (2007).
- Castellan, G.W. *Physical Chemistry* 4th Ed. Narosa (2004).
- B. R. Puri, Madan S. Pathania , L. R. Sharma *Principles of Physical Chemistry, 48th Ed.,* Vishal Publications
- Peter Atkins , Julio de Paula , James Keeler *Atkins' Physical Chemistry*, Oxford University Press

M. Sc. Engineering Physics
Semester – I
Subject: Chemistry
(Course Type-Core, Course Code: CH-103)
Nomenclature: Organic Chemistry-I
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

Section-A (15 hrs)

Fundamentals of Organic Chemistry

Structure and Bonding: Localized and delocalized chemical bond, Van der Waals interactions, resonance: conditions, resonance effect and its applications, hyperconjugation, inductive effect, Electromeric effect & their comparison.

Mechanism of Organic Reactions:Curved arrow notation, drawing electron movements with arrows, half-headed and double-headed arrows, homolytic and heterolytic bond breaking. Types of reagents–electrophiles and nucleophiles.Types of organic reactions (Substitution, Addition, Elimination, Rearrangement etc.). Reactive intermediates: Carbocations, carbanions, free radicals, carbenes (structure & stability).

Strength of organic acids and bases: Comparative study with emphasis on factors affecting pK values.

Stereochemistry of Organic Compounds

Concept of isomerism: Types of isomerism, Optical isomerism, elements of symmetry, molecular chirality, enantiomers, stereogeniccentre, optical activity, properties of enantiomers, chiral and achiral molecules with two stereogeniccentres, diastereomers and meso compounds (tartaric acid and 2,3-dichlorobutane), threo- and erythro-diastereomers (Erythrose, Threose, 2,3-dichlorobutane), resolution of enantiomers, Relative and absolute configuration, CIP rules, R & S nomenclature. Geometric isomerism: Configuration of

geometric isomers. Cis-Trans and E & Z nomenclature, Conformational isomerism: conformational analysis of ethane and n-butane; chair, boat, half chair and twist boat conformations of cyclohexane (interconversions and energy level diagram). Interconversions of Newman projection and Sawhorse formulae, Wedge Formula and Fischer representations (Erythrose, Threose and Tartaric acid), Difference between configuration and conformation.

Section-B (15 hrs)

Alkanes and Cycloalkanes

IUPAC nomenclature of branched and unbranched alkanes, classification of carbon atoms in alkanes. Isomerism in alkanes, sources, methods of formation: Wurtz reaction, Kolbe reaction, Corey-House reaction and decarboxylation of carboxylic acids, physical properties. Mechanism of free radical halogenation of alkanes: reactivity and selectivity.

Nomenclature, Baeyer's strain theory and its limitations, theory of strainless rings.

Alkenes and Dienes:

Nomenclature of alkenes, mechanisms of dehydration of alcohols and dehydrohalogenation of alkyl halide.The Saytzeff rule, Hofmann elimination, physical properties and relative stabilities of alkenes. Chemical reactions of alkenes, mechanisms involved in halogenations and halohydrogenation, electrophilic and free radical additions, Markownikoff's rule, hydroboration–oxidation, oxymercuration, reduction, ozonolysis, hydration, hydroxylation and oxidation with KMnO4.
Nomenclature and classification of dienes: isolated, conjugated and cumulated dienes. Structure of butadiene. Chemical reactions: 1,2 and 1,4 additions (Electrophilic & free radical mechanism), Diels-Alder reaction (effects of substituent excluded)

Alkynes:

Nomenclature, structure and bonding in alkynes. Methods of formation.Chemical reactions of alkynes, acidity of alkynes.Mechanism of electrophilic and nucleophilic addition reactions, hydroboration-oxidation of alkynes.

Course Outcomes:

CO1: Have sound knowledge of the basic organic chemistry like electron displacement effects with suitable examples

CO2: Get information about the types of structural and stereoisomers, optical isomerism, and different nomenclature like D/L, RScis/trans, E/Z etc. of various organic compounds

CO3: Learn nomenclature of various type of alkanes and cycloalkanes, preparation and their chemical reactions

CO4: Sound knowledge of alkenes, alkynes, dienes and their chemical reactions

Reference Books:

- Graham Solomon, T.W., Fryhle, C.B. &Dnyder, S.A. *Organic Chemistry,* John Wiley & Sons (2014).
- McMurry, J.E. *Fundamentals of Organic Chemistry,* 7th Ed. Cengage Learning India Edition, 2013.
- Sykes, P. *A Guidebook to Mechanism in Organic Chemistry,* Orient Longman, New Delhi (1988).
- Eliel, E.L. *Stereochemistry of Carbon Compounds,* Tata McGraw Hill education, 2000.
- Finar, I.L. *Organic Chemistry* (Vol. I & II), E.L.B.S.
- Morrison, R.T. & Boyd, R.N. *Organic Chemistry,* Pearson, 2010.
- Bahl, A. &Bahl, B.S. *Advanced Organic Chemistry,* S. Chand, 2010.
- Pradeep's organic chemistry, Volume I, II
- R Chand, organic chemistry, Volume I,II
- Modern publications, organic chemistry, Volume I,II
- New Age International (P) Ltd, Publishers, Volume I,II

M. Sc. Engineering Physics
Semester-I
Subject: Chemistry
(Course Type-Core, Course Code: CH-104)
Nomenclature: Chemistry practical-I
Credits: 2

Max. Marks: 50
Time: 6 hrs.

Special Note: -

The Practical examination will be held in two sessions of 3 hours each & the students are required to perform two experiments during the examination.

Distribution of Marks:

Experiment	15+15 marks
Viva- voce	5+5 marks
Lab Record	10 marks
Total	50 marks

List of Experiments

1. Preparation of reference solutions.
2. Redox titrations: Determination of Fe^{2+}, $C_2O_4^{2-}$ (using $KMnO_4$, $K_2Cr_2O_7$)
3. Iodometric titrations: Determination of Cu^{2+} (using standard hypo solution).
4. Complexometric titrations: Determination of Mg^{2+}, Zn^{2+} by EDTA.
5. To determine the surface tension of at least two liquids using a stalagmometer by drop no. and drop weight methods (Use of organic solvents excluded).
6. To study the effect of surfactant on surface tension of water.
7. To determine the viscosity of at least two liquids by using Ostwald's viscometer (Use of organic solvents excluded).
8. To determine the specific refractivity of at least two liquids.

Course Outcomes:

CO1: To gain knowledge about Preparation of standard solutions used in the lab

CO2: Know about Redox , iodometric titrations and complexometric titrations.

CO3: To study the concept of surface tension and its determination by various methods

CO4: To know about viscosity and its measurements by using Ostwald's viscometer

M. Sc. Engineering Physics
Semester-II
Subject: English
(Course Type-Ability Enhancement Compulsory Course, Course Code: ENG-201)
Nomenclature: English Communication
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note: All questions are compulsory.

Q. 1. The paper setter will set two questions from Unit II. The student shall attempt one out of the given two. (Marks-10)

Q. 2. This question shall be based on unit III. The student shall attempt one question out of two. (Marks-10)

Q. 3 There will be 25 grammatical items based on unit IV. The student shall attempt any 20 items. (Marks-20)

Note: Internal Assessment: The student shall be required to make a presentation/PPT based on unit I.

UNIT – I

Listening and Speaking Skills

1. Listening Skills (Active-Passive, Accent)
2. Speaking Skills (Stress, Intonation, Assertion, Rhetorical questions)
3. Oral Presentation, Debates, Elocution and Extempore

UNIT – II

Writing Skills

1. Report writing
2. Paragraph writing
3. Letter writing

UNIT – III

Technical and Modern Communication

1. Resume writing
2. Email
3. Blogs and Comments on Social Media

UNIT- IV

Grammar

1. Common errors in the use of English
   (Noun, Pronoun, Adjective, Adverb, Conjunction)
2. Correct use of verbs and Articles
3. Vocabulary: Homonyms, Homophones, Pair of words

Course Outcomes:

1. The students will learn the rhetorics of presentation.
2. They will learn to comment and respond to correspondence.
3. They will learn the basics of grammar and composition.
4. They will be acquainted with verbal and non-verbal communication.

M. Sc. Engineering Physics
Semester-II
Subject: Physics
(Course Type-Core, Course Code: EP-201)
Nomenclature: Electricity, Magnetism & Electromagnetic Theory
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hours

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4. 20% numerical problems are to be set.
5. Use of scientific (non-programmable) calculator is allowed.

UNIT-I

VECTOR BACKGROUND AND ELECTRIC FIELD

Gradient of a scalar and its physical significance, Line, Surface and Volume integrals of a vector and their physical significance, Flux of a vector field, Divergence and curl of a vector and their physical significance, Gauss's divergence theorem, Stoke's theorem. Derivation of electric field $\vec{E}$ from potential as gradient. Derivation of Laplace and Poisson equations, Electric flux, Gauss's Law, Mechanical force of charged surface, Energy per unit volume.

(15 Lectures)

UNIT-II

MAGNETISM

Magnetic induction, Magnetic flux, Solenoidal nature of vector field of induction, properties of $\vec{B}$ (i) $\nabla.\vec{B} = 0$ (ii) $\nabla\times\vec{B} = \mu_o J$, Electronic theory of dia and paramagnetism, Domain theory of ferromagnetism (Langevin's theory), Cycle of Magnetization- Hysteresis loop (Energy dissipation, Hysteresis loss and importance of Hysteresis Curve).

(15 Lectures)

UNIT-III

ELECTROMAGNETISM

Maxwell equations and their derivations, Displacement current, Vector and Scalar potentials, Boundary conditions at interface between two different media, Propagation of electromagnetic wave (Basic idea, no derivation), Poynting vector and Poynting theorem.

(15 Lectures)

UNIT-IV

A.C. ANALYSIS

A.C. circuit analysis using complex variable with (a) Capacitance and Resistance (CR) (b) Resistance and Inductance (LR) (c) Capacitance and Inductance (LC) and (d) Capacitance, Inductance and Resistance (LCR), Series and parallel resonance circuit, Quality factor (sharpness of resonance).

(15 Lectures)

CO No.	**Course code (EP-201): Electricity, Magnetism & Electromagnetic Theory**

After successfully completing the course, student will be able to:

CO-1 Explain and differentiate the vector and scalar formalisms of electrostatics. Also be able to Apply Gauss's law of electrostatics to solve a variety of problems.

CO-2 Describe the important properties of magnetic field. Understand the properties and theories of dia-, para- & ferromagnetic materials.

CO-3 Derive Maxwell equations and understand the role of displacement current, scalar and vector potentials and boundary conditions at the interface between different media. The students will also be able to have basic idea about the propagation of electromagnetic waves.

CO-4 Analyze AC circuits consisting of parallel and/or series combinations of voltage sources and resistors and to describe the graphical relationship of resistance, capacitor and inductor.

REFERENCES

1. Electricity and Magnetism, Reitz and Milford (Prentice Hall of India)
2. Electricity and Magnetism, A.S. Mahajan and A.A. Rangwala (Tata McGraw Hill)
3. Electricity and Magnetism, Edward M Purcell, 1986, McGraw-Hill Education
4. Electricity and Magnetism, J.H. Fewkes & J. Yarwood, Vol. I, 1991, Oxford University Press.
5. Introduction to Electrodynamics, D.J. Griffiths, 3rd Edn 1998 Benjamin Cummings.
6. Electricity and Magnetism, R. Murugeshan, S.Chand & Com. Pt. Ltd., New Delhi
7. Electromagnetic Fields and waves, K.D. Prasad, Satya Prakashan, New Delhi

M. Sc. Engineering Physics
Semester-II
Subject: Physics
(Course Type, Course Code: EP-202)
Nomenclature: ELECTRONICS
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hours

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4. 20% numerical problems are to be set.
5. Use of scientific (non-programmable) calculator is allowed.

UNIT-I

BASIC ELECTRONICS

Ideal current source, Ideal voltage source, Current and voltage divider law, Millman's theorem, Thevenin's theorem, Norton's theorem and numericals based on these theorems. Maximum power transfer theorem (with both DC and AC sources), Delta-Star theorem, Nodal Analysis, Maxwell Loop method.

(15 Lectures)

UNIT-II

SEMICONDUCTORS

Energy bands in solids, Intrinsic and extrinsic semiconductors, carrier mobility and electrical resistivity of semiconductors, Hall effect, p-n junction diode and their characteristics, Zener and Avalanche breakdown, Zener diode, Zener diode as a voltage regulator. Light emitting diodes (LED), Photoconduction in semiconductors, Photodiode, Solar Cell, *p-n* junction as a rectifier, half wave and full wave rectifiers (with derivation), filters (series inductor, shunt capacitance, L-section or choke, π and R.C. filter circuits).

(15 Lectures)

UNIT-III

TRANSISTORS

Junction transistors, Working of NPN and PNP transistors, Three configurations of transistor (C-B, C-E, C-C modes), Common base, common emitter and common collector characteristics of transistor, Constants of a transistor and their relation, Advantages and disadvantages of C-E configuration. D.C. load line. Transistor biasing; various methods of transistor biasing and stabilization.

(15 Lectures)

UNIT-IV

TRANSISTOR AMPLIFIERS

Amplifiers, Classification of amplifiers, common base and common emitter amplifiers, coupling of amplifiers, various methods of coupling, Resistance- Capacitance (RC) coupled amplifier (two stage, concept of band width, no derivation), Feedback in amplifiers, advantages of negative feedback, emitter follower, distortion in amplifiers.

(15 Lectures)

CO No. **Course code (EP-202) : Electronics**

After successfully completing the course, student will be able to:

CO-1 Understand the complex electrical networks analysis using different network theorems.

CO-2 Understand the basic concepts and different applications of PN junction diode in different type of rectifiers, voltage regulators, solar cell, LED's etc.

CO-3 Describe the basic structure, working principle and characteristics of Bipolar Junction transistors.

CO-4 Understand and explain the classification of Amplifiers and the various coupling & feedback methods in BJT amplifiers.

REFERENCES

1. Basic Electronics and Linear Circuits, N. N. Bhargava, D.C. Kulshreshtha and S.C. Gupta (TITI CHD)
2. Solid State Electronics, J.P. Agarwal, Amit Agarwal , Pragati Prakashan Meerut
3. Electronics Fundamentals and Applications, J.D. Ryder (Prentice Hall India)
4. Solid State Electronics, B.L.Theraja, S. Chand & Company, Delhi/Chandigarh
5. Electronic Devices and Circuits, Jacob Millman and Christos Halkias, McGraw Hill Publisher, New Delhi

M. Sc. Engineering Physics
Semester-II
Subject: Physics
(Course Type-Core, Course Code: EP-203)
Nomenclature: Physics Practical-II
Credits: 2

Max. Marks: 50
Time: 3 hrs.

Special Note: -

1. Do any eight experiments from the given list of experiments.
2. The students are required to calculate the error involved in a particular experiment.
3. The Practical examination will be held in a single session of 3 hours.

Distribution of Marks:

Experiment	25 marks
Viva- voce	15 marks
Lab Record	10 marks
Total	50 marks

List of Experiments:

1. To use Multimeter for measuring Resistance, A.C. and D.C. Voltage and Current, checking of electrical fuses.
2. Low resistance by Carey Foster's bridge with calibration.
3. Determination of Impedance of an A.C. circuit and its verification.
4. Frequency of A.C. mains using an electromagnet.
5. Frequency of A.C. mains Electrical vibrator.
6. High resistance by substitution method.
7. To draw forward and reverse characteristics of semiconductor diode.
8. Zener diode voltage regulation characteristics.
9. Verification of inverse square law by photo- cell.
10. To study the characteristics of Solar cell.
11. To study the characteristics of a transistor in C.B configuration.
12. To study the characteristics of a transistor in C.E. configuration.

CO No.	**Course code (EP-203) : Physics Practical-II** **After successfully completing the course, student will be able to:**
CO-1	Hands on experience with the uses of multimeter.
CO-2	Characterize various devices namely PN junction diodes, LEDs, Zener diode, solar cells, PNP and NPN transistors.
CO-3	Perform the experiments to determine the values of frequency of A.C. mains, values of low and high resistances using different methods and be able to appreciate the concepts of physics involved in these experiments.
CO-4	Learn to present observations, results and analysis in suitable and presentable form.

REFERENCES

1. B.Sc. Practical Physics, C.L. Arora, S. Chand Publisher, New Delhi
2. Advanced Level Practical Physics, M. Nelkon and Ogborn, Henemann Education Books Ltd., New Delhi
3. Practical Physics, S.S. Srivastava and M.K. Gupta, Atma Ram & Sons, Delhi
4. Practical Physics, S.L. Gupta and V. Kumar, Pragati Prakashan Meerut
5. Modern Approach to Practical Physics, R.K. Singla, Modern Publishers, Jalandhar
6. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, Asia Publishing House

M. Sc. Engineering Physics
Semester – II
Subject: Mathematics
(Course Type-Core, Course Code: MT-201)
Nomenclature: Advanced Calculus
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. The examiner will set 8 questions asking two questions from each unit by taking course outcomes (COs) into consideration.
2. The examinee will be required to attempt 5 questions, selecting at least one question from each unit.

Unit-I:

Mean value theorems: Rolle's Theorem and Lagrange's mean value theorem and their geometrical interpretations, Cauchy mean value theorem. Taylor's Theorem with various forms of remainders, Darboux intermediate value theorem for derivatives. Indeterminate forms.

Unit-II:

Functions of several variables, Level curves and surfaces, Limits and continuity. Partial differentiation. Total Differentials; Composite functions & implicit functions. Chain rule. Change of variables. Homogenous functions & Euler's theorem on homogeneous functions. Taylor's theorem for functions of two or more variables.

Unit-III:

Differentiability of real valued functions of two variables. Schwarz and Young's theorem. Implicit function theorem. Extrema of functions of two and more variables; Maxima, Minima critical points, Method of Lagrange multipliers. Constrained optimization problems

Unit-IV:

Double integration over rectangular and nonrectangular regions, Double integrals in polar co-ordinates. Jacobian. Change of order of integration. Triple integral over a parallelepiped and solid regions, Volume by triple integrals, Triple integration in cylindrical and spherical coordinates. Dirichlet integrals. Beta and Gama functions.

Course Outcomes: This course will enable the students to:

1. Understand and to prove Rolle's Theorem, mean value theorems and their geometrical interpretations. To determine indeterminate forms.
2. Learn conceptual variations while advancing from one variable to several variables in calculus, limit and continuity, partial differentiation of such functions. To understand composite functions, homogeneous functions and to solve related problems.
3. Understand differentiability of real valued functions of two variables and to prove associated results. To determine maximum and minimum of functions of two variables and to apply multivariable calculus in optimization problems.
4. Evaluate double and triple integrals. To learn about Dirichlet integrals, Beta and Gamma functions and to solve related problems.

Recommended Text Books:

1. Howard Anton, I. Bivens & Stephan Davis (2016). *Calculus* (10th edition). Wiley India.
2. Gabriel Klambauer (1986). *Aspects of Calculus*. Springer-Verlag.
3. Wieslaw Krawcewicz & Bindhyachal Rai (2003). *Calculus with Maple Labs*. Narosa.
4. Gorakh Prasad (2016). *Differential Calculus* (19th edition). Pothishala Pvt. Ltd.
5. George B. Thomas Jr., Joel Hass, Christopher Heil & Maurice D. Weir (2018). *Thomas' Calculus* (14th edition). Pearson Education.
6. Monty J. Strauss, Gerald L. Bradley & Karl J. Smith (2011). *Calculus* (3rd edition). Pearson Education. Dorling Kindersley (India) Pvt. Ltd.
7. Jerrold Marsden, Anthony J. Tromba & Alan Weinstein (2009). *Basic Multivariable Calculus*, Springer India Pvt. Limited.
8. James Stewart (2012). *Multivariable Calculus* (7th edition). Brooks/Cole. Cengage.

M. Sc. Engineering Physics
Semester – II
Subject: Mathematics
(Course Type-Core, Course Code: MT-202)
Nomenclature: Differential Equations
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. The examiner will set 8 questions asking two questions from each unit by taking course outcomes (COs) into consideration.
2. The examinee will be required to attempt 5 questions, selecting at least one question from each unit.

Unit-I:

Basic concepts and genesis of ordinary differential equations, Order and degree of a differential equation, Differential equations of first order and first degree, Equations in which variables are separable, Homogeneous equations, equations reducible to homogeneous, Linear differential equations and equations reducible to linear form. Exact differential equations, Integrating factor. First order higher degree equations solvable for x, y and p. Clairaut's form and singular solutions. Orthogonal trajectories of one-parameter families of curves in a plane.

Unit-II:

Solutions of homogeneous linear ordinary differential equations of second order with constant coefficients, linear non-homogeneous differential equations. Linear differential equation of second order with variable coefficients. Method of reduction of order, method of undetermined coefficients, method of variation of parameters. Cauchy-Euler equation.

Unit-III:

Solution of simultaneous differential equations, total differential equations.

Genesis of Partial differential equations (PDE), Concept of linear and non-linear PDEs. Complete solution, general solution and singular solution of a PDE. Linear PDE of first order. Lagrange's method for PDEs of the form: $P(x,y,z)\ p + Q(x,y,z)\ q = R(x,y,z)$, where $p=\partial z/\partial x$ and $q=\partial z/\partial y$.

Unit-IV: Second Order Partial Differential Equations with Constant Coefficients

Integral surfaces passing through a given curve. Surfaces orthogonal to a given system of surfaces. Compatible systems of first order equations. Charpit's method, Special types of first order PDEs, Jacobi's method. Solutions of second order linear partial differential equations (homogeneous and non-homogeneous) with constant coefficients. Solution of PDEs with variable coefficients reducible to equations with constant coefficients.

Course Outcomes: The course will enable the students to:

1. Understand the basic concepts of ordinary differential equations and to learn various techniques of finding exact solutions of certain solvable first order differential equations. and.
2. Develop the skills of solving homogeneous and non-homogeneous second order linear ordinary differential equations with constant coefficients and with variable coefficients.
3. Understand total differential equations and basic concepts of partial differential equations. To learn methods and techniques for solving linear PDEs of first order.
4. Apply theory of PDEs to determine integral surfaces through a given curve and to find orthogonal surfaces. To understand compatible systems and Charpit method, Jacobi method methods for solving PDEs. To learn techniques of solving second order PDEs.

Recommended Text Book:

1. Erwin Kreyszig (2011). *Advanced Engineering Mathematics* (10th edition). J. Wiley & Sons
2. B. Rai & D. P. Choudhury (2006). *Ordinary Differential Equations - An Introduction*. Narosa Publishing House Pvt. Ltd. New Delhi.
3. Shepley L. Ross (2007). *Differential Equations* (3rd edition). Wiley.
4. George F. Simmons (2017). *Differential Equations with Applications and Historical Notes* (3rd edition). CRC Press. Taylor & Francis.
5. Ian N. Sneddon (2006). *Elements of Partial Differential Equations*. Dover Publications.

M. Sc. Engineering Physics
Semester-II
Subject: Mathematics
(Course Type-Core, Course Code: MT-203)
Nomenclature: Mathematics practical-II
No. of Credits: 2

Max. Marks: 50
Time: 3 hrs.

Special Note: -

1. This course has two components, Problem Solving and Practical using MAXIMA software.
2. The examiner will set 4 questions at the time of practical examination asking two questions from the part (a) and two questions from the part (b) by taking course outcomes (COs) into consideration.
3. The examinee will be required to solve one problem from the part (a) and to execute one program successfully from the part (b).
4. The evaluation will be done on the basis of practical record, viva-voce, write up and execution of the program.
5. The Practical examination will be held in a single session of 3 hours.

Distribution of Marks:

Experiment	25 marks
Viva- voce	15 marks
Lab Record	10 marks
Total	50 marks

a) Problem Solving- Questions related to the following problems will be solved and record of those will be maintained in the Practical Notebook:

1. Problems of finding continuity of functions of several variables.
2. Problems of finding differentiability of functions of several variables.
3. Problems of finding maxima and minima of functions of two variables.
4. Solving optimization problems.
5. Problem solving of determination surface area through application of double integrals in Cartesian and polar coordinates.
6. Problems of determination of volume using triple integrals.
7. Problems of solving differential equations which are reducible to homogeneous.
8. Problems of solving differential equations which are reducible to linear.
9. Problems of solving differential equations by method of undetermined coefficients.
10. Problems of solving different PDEs using Lagrange's method.
11. Problems of solving PDEs with Charpit's method.
12. Problems of solving second order PDEs with variable coefficients which can be reduced to those with constant coefficients.

b) Practicals with Free and Open Source Software(FOSS) Tools- The following practicals will be done using MAXIMA Software and record of those will be maintained in the practical Note Book:

1. To find partial derivatives of a function using MAXIMA.
2. To find total differential of a function of several variables using MAXIMA.
3. To find partial derivatives by chain rule and implicit differentiation.
4. To plot a curve in two dimensions, three dimensional plots and level surfaces using MAXIMA.
5. To find exact solutions of first and second order ODEs using ode2 and ic1/ic2 built in functions of MAXIMA.
6. To find exact solutions of first and second order ODEs using desolve and at value built in functions of MAXIMA.
7. To evaluate double and triple integrals using MAXIMA.
8. To find numerical solution of a first order ODE using plotdf built in function of MAXIMA.

Course Outcomes: This course will enable the students to:

1. Practical problems of checking continuity and differentiability and of finding maxima and minima of functions of several variables.
2. Practical problems of evaluating double and triple integrals in reference of their applications.
3. Develop skills of solving ODEs which are reducible to homogeneous, linear.
4. Practical problems of solving partial differential equations.
5. Hands-on experience to find partial derivatives, total derivative, plot graphs of functions, evaluate double and triple integrals, solve ordinary differential equations by using built in functions of MAXIMA software.

M. Sc. Engineering Physics
Semester – II
Subject: Chemistry
(Course Type-Core, Course Code: CH-201)
Nomenclature: Inorganic Chemistry-II
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

Section – A (15 hrs)

Hydrogen Bonding and Van der Waals forces

Hydrogen Bonding – Definition, types, effects of hydrogen bonding on properties of substances, application Brief discussion of various types of Van der Waals forces.

Metallic Bond and semiconductors

Metallic bond – Qualitative idea of valence bond and Band theories of metallic bond (conductors, semiconductors, insulators). Semiconductors – Introduction, types and applications.

s-Block elements

Comparative study of the elements including diagonal relationship, Anomalous behaviour of Lithium and Beryllium compared to other elements in the same group, salient features of hydrides, oxides, halides, hydroxides (methods of preparation excluded), behaviour of solution in liquid NH3.

Chemistry of Noble Gases

General physical properties, low chemical reactivity, chemistry of xenon, structure and bonding in fluorides, oxides and oxyfluorides of xenon.

Section – B (15 hrs)

p-Block elements:

Electronic configuration, atomic and ionic size, metallic character, melting point,ionization energy, electron affinity, electronegativity, inert pair effect and diagonal relationship.

Boron family (13th group):

Diborane: Preparation, properties and structure (as an example of electron deficient compound and multicenter bonding), Borazine chemical properties and structure, relative strength of Trihalide of Boron as lewis acids, structure of aluminium (III) chloride.

Carbon family and Nitrogen family (14th and 15th group):

Catenation, Carbides, fluoro carbons, silicates (structural aspects). Oxides: Structure of oxides of nitrogen and phosphorus, Oxyacids : Structure and relative acid strength of oxyacids of nitrogen and phosphorus, structure of white and Red phosphorus.

Oxygen family (16th group):

Oxy acids of sulphur – structure and acidic strength, Hydrogen Peroxide – properties and uses.

Halogen family (17th group):

Interhalogen compounds (their properties and structures), Hydra and oxy acids of chlorine – structure and comparison of acid strength, cationic nature of Iodine.

Course Outcomes :

CO1: To know the concept and able to explain types and effect of hydrogen bonding and van der waals forces on properties of substances

CO2: To learn about the various theories of metallic bonding with reference to conductors, insulators and semiconductors and their applications

CO3: To know about the diagonal relationship among S- block elements and about hydrides, oxides, hydroxides and halides of S-block elements

CO4: Learn about chemistry of noble gases with special reference to xenon

CO5 To know about the physical and chemical properties of p-block elements

CO6: Have knowledge about the boron family elements their structure, preparation and properties of diborane and borazine

CO7: To learn about the elements of carbon and nitrogen family and concept of catenation, carbides and fluorocarbons

CO8: To know about the elements of oxygen family and have knowledge about the chemical properties of oxides of Sulphur

Reference readings

- Lee, J.D. *Concise Inorganic Chemistry* ELBS, 1991.
- Cotton, F.A., Wilkinson, G. &Gaus, P.L. *Basic Inorganic Chemistry*, 3rd ed., Wiley.
- Douglas, B.E., McDaniel, D.H. & Alexander, J.J. *Concepts and Models in Inorganic Chemistry*, John Wiley & Sons.
- Huheey, J.E., Keiter, E.A., Keiter, R.L. & Medhi, O.K. *Inorganic Chemistry:Principles of Structure and Reactivity*, Pearson Education India, 2006.
- Pradeep's inorganic chemistry, Volume I
- R Chand, inorganic chemistry, Volume I
- Modern publications,inorganic chemistry, Volume I

M. Sc. Engineering Physics
Semester – II
Subject-Chemistry
(Course Type-Core, Course Code: CH-202)
Nomenclature: Physical Chemistry-II
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

Section–A (15 Hours)

Chemical Kinetics

The concept of reaction rates. Effect of temperature, pressure, catalyst and other factors on reaction rates. Order and molecularity of a reaction. Derivation of integrated rate equations for zero, first and second order reactions (both for equal and unequal concentrations of reactants). Half–life of a reaction. General methods for determination of order of a reaction. Concept of activation energy and its calculation from Arrhenius equation. Theories of Reaction Rates: Collision theory and Activated Complex theory of bimolecular reactions. Comparison of the two theories (qualitative treatment only).

Introduction to Statistical Mechanics

Need for statistical thermodynamics, thermodynamic probability, Maxwell-Boltzmann distribution statistics, Born oppenheimer approximation, partition function and its physical significance. Factorization of partition function.

Section-B (15 Hours)

Conductance

Conductance, equivalent and molar conductance and their variation with dilution for weak and strong electrolytes. Kohlrausch law of independent migration of ions.Transference number and its experimental determination using Hittorf and Moving boundary methods. Ionic mobility. Applications of conductance measurements:determination of degree of

ionization of weak electrolyte, solubility and solubility products of sparingly soluble salts, ionic product of water, hydrolysis constant of a salt. Concepts of pH and pKa , Buffer solution, Buffer action, Henderson – Hasselbalch equation, Buffer mechanism of buffer action, Conductometric titrations (only acid-base).

Electrochemistry-I

Reversible and irreversible cells. Concept of EMF of a cell. Measurement of EMF of a cell. Nernst equation and its importance. Types of electrodes. Standard electrode potential. Electrochemical series. Thermodynamics of a reversible cell, calculation of thermodynamic properties: ΔG, ΔH and ΔS from EMF data.Calculation of equilibrium constant from EMF data.

Course Outcomes:

CO1: To have the knowledge about the concepts of rates of chemical reactions and its applications in derivation of reactions of various orders and half-life

CO2: To understand the need of statistical mechanics and Maxwell-Boltzmann distribution, partition function and its significance

CO3: To have information about conductance and its applications to deduce various parameters related to electrolytic solutions, to know about pH and conductometric titrations

CO4: Know about Concept of basics of cells their EMF determination by use of Nernst equation and thermodynamic properties

Reference Books:

- Barrow, G.M. *Physical Chemistry* Tata McGraw-Hill (2007).
- Castellan, G.W. *Physical Chemistry* 4th Ed. Narosa (2004).
- B. R. Puri, Madan S. Pathania , L. R. Sharma*Principles of Physical Chemistry* Vishal Publications
- Peter Atkins , Julio de Paula , James Keeler *Atkins' Physical Chemistry*, Oxford University Press
- K.J. Laidler, *Chemical Kinetics*, Perason

M. Sc. Engineering Physics
Semester – II
Subject – Chemistry
(Course Type-Core, Course Code: CH-203)
Nomenclature: Organic Chemistry-II
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

Section-A (15 hrs)

Arenes and Aromaticity

Nomenclature of benzene derivatives: Aromatic nucleus and side chain. Aromaticity: the Huckel rule, aromatic ions, annulenes up to 10 carbon atoms, aromatic, anti-aromatic and non-aromatic compounds. Aromatic electrophilic substitution, mechanism of nitration, halogenation, sulphonation, and Friedel-Crafts reaction.Activating , deactivating substituents. Orientation in monosubstituted benzenes

Alkyl and Aryl Halides

Nomenclature and classes of alkyl halides, methods of formation, chemical reactions. Mechanisms and stereochemistry (inversion and racemization) of nucleophilic substitution reactions of alkyl halides, SN2 and SN1 reactions with energy profile diagrams.

Methods of formation and reactions of aryl halides, the addition-elimination and the elimination -addition mechanisms of nucleophilic aromatic substitution reactions.

Relative reactivities of alkyl halides vsallyl, vinyl and aryl halides.

SECTION-B (15 hrs)

Alcohols and Epoxides

Monohyric alcohols: nomenclature, methods of formation by reduction of aldehydes, ketones, carboxylic acids and esters. Hydrogen bonding.Acidic nature.Reactions of alcohols. Dihydric alcohols — nomenclature, methods of formation, chemical reactions of vicinal glycols, oxidative cleavage [$Pb(OAc)_4$ and HIO_4] and pinacol-pinacolone rearrangement.

Synthesis of epoxides. Acid and base-catalyzed ring opening of epoxides, orientation of epoxide ring opening,

Ethers (aliphatic and aromatic): Cleavage of ethers with HI.

Phenols

Nomenclature, structure and bonding.Preparation of phenols, physical properties and acidic character.Comparative acidic strengths of alcohols and phenols, resonance stabilization of phenoxide ion.Reactions of phenols — electrophilic aromatic substitution, Mechanisms of Fries rearrangement, Claisen rearrangement, Reimer-Tiemann reaction, Kolbe's reaction

Carboxylic Acids & Acid Derivatives

Nomenclature of Carboxylic acids, structure and bonding, physical properties, Preparation of carboxylic acids.Reactions of carboxylic acids.Hell-Volhard-Zelinsky reaction.Mechanism of decarboxylation.Relative stability of acyl derivatives.Physical properties, interconversion of acid derivatives by nucleophilic acyl substitution.

Mechanisms of esterification and hydrolysis (acidic and basic).

Course Outcomes:

CO1: Know about Huckel's rule of aromaticity and various methods of preparation of aromatic Hydrocarbons

CO2: Get knowledge about the mechanism of S_N1 and S_N2 reactions and other various chemical reactions of aryl and aryl halides

CO3: Know about alcohols, phenols, ethers, epoxides and their chemical reactions

CO4: Knowledge about various methods for the preparation of carboxylic acid, carboxylic derivatives (ester, amide, acid chlorides, anhydrides) and their chemical reactions

Reference Books:

- Graham Solomon, T.W., Fryhle, C.B. &Dnyder, S.A. *Organic Chemistry*, John Wiley & Sons (2014).
- McMurry, J.E. *Fundamentals of Organic Chemistry*, 7th Ed. Cengage Learning India Edition, 2013.

- Sykes, P. *A Guidebook to Mechanism in Organic Chemistry,* Orient Longman, New Delhi (1988).
- Finar, I.L. *Organic Chemistry* (Vol. I & II), E.L.B.S.
- Morrison, R.T. & Boyd, R.N. *Organic Chemistry,* Pearson, 2010.
- Bahl, A. &Bahl, B.S. *Advanced Organic Chemistry,* S. Chand, 2010.
- Kotz, J.C., Treichel, P.M. & Townsend, J.R. *General Chemistry* Cengage Learning India Pvt. Ltd., New Delhi (2009).
- Mahan, B.H. *University Chemistry* 3rd Ed. Narosa (1998).
- Petrucci, R.H. *General Chemistry* 5th Ed. Macmillan Publishing Co.: New York (1985).
- Pradeep's organic chemistry, Volume I & II
- R Chand, organic chemistry, Volume I & II
- Modern publications, organic chemistry, Volume I & II
- New Age International (P) Ltd, Publishers, Volume I, II

M. Sc. Engineering Physics
Semester-II
Subject: Chemistry
(Course Type-Core, Course Code: CH-204)
Nomenclature: Chemistry practical-II
Credits: 2

Max. Marks: 50
Time: 6hrs.

Special Note: -

The Practical examination will be held in two sessions of 3 hours each & the students are required to perform two experiments during the examination.

Distribution of Marks:

Experiment	15+15 marks
Viva- voce	5+5 marks
Lab Record	10 marks
Total	50 marks

List of Experiments

1. Preparation and purification through crystallization or distillation and ascertaining their purity through melting point or boiling point

(i) Iodoform from ethanol (or acetone)

(ii) *m-Dinitrobenzene* from nitrobenzene (use 1:2 conc. HNO_3 - H_2SO_4 mixture if fuming HNO_3 is not available)

iii) p-Bromoacetanilide from acetanilide

iv) Dibenzalacetone from acetone and benzaldehyde

v) 2,4-DNP derivative of Benzophenone/Acetophenone.

2. To study the process of (i) sublimation (ii) Crystallization of camphor and phthalic acid
3. Qualitative Analysis of any one of the following Inorganic cations and anions by paper chromatography (Pb^{2+}, Cu^{2+}, Ca^{2+}, Ni^{2+}, Cl^-, Br^-, I^-, PO_4^{3-} and NO_3^-).

Course Outcomes:

CO1: To learn about, How to Purify organic compounds by crystallization (with alcohol and water), sublimation and distillation

CO2: Able to prepare various organic compounds and also their derivatives

CO3: To study the process of sublimation and crystallization of camphor and phthalic acid

CO4: Able to analyze qualitatively inorganic cations and anions using paper chromatography

KURUKSHETRA UNIVERSITY KURUKSHETRA

Five Years Integrated
M. Sc. Engineering Physics (3 Years BSc+2Years M.Sc.)
Under CBCS-LOCF
(Effective from the Academic Session 2021-22)

Department of Physics
INSTITUTE OF INTEGRATED & HONORS STUDIES
Kurukshetra University
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Scheme and Syllabi of five years integrated
M. Sc. ENGINEERING PHYSICS Programme
(From 1st to 6th semester)
Under CBCS-LOCF
(w. e. f. from the Academic Session 2021-22)
(After 3 Years / 6 Semesters, students may be awarded B. Sc. -Engineering Physics Degree)

2nd Year (3rd and 4th Semesters)

3rd Semester

Course Type & No.	Course Code	Course Nomenclature	Credits (L+T+P)	Teaching Hours per week	Maximum Marks			Duration of Examination (Hrs.)
					Internal Assessment*	End-semester Examination	Total	
Skill Enhancement Course-I	SEC-301	Programming skills with -C	2+0+0	2	10	40	50	3
Core Course-VII (Physics)	EP-301	Thermal Physics	3+0+0	3	15	60	75	3
Core Course-VIII (Physics)	EP-302	Statistical Mechanics	3+0+0	3	15	60	75	3
Core Course-IX (Physics)	EP-303	Physics Practical-III	0+0+2	4	----------	50	50	3
Core Course-VII (Mathematics)	MT-301	Real Analysis-I	3+0+0	3	15	60	75	3
Core Course-VIII (Mathematics)	MT-302	Mechanics – I	3+0+0	3	15	60	75	3
Core Course-IX (Mathematics)	MT-303	Mathematics Practical-III	0+0+2	4	----------	50	50	3
Core Course-IX (Chemistry)	CH-301	Inorganic chemistry-III	2+0+0	2	10	40	50	3
Core Course-X (Chemistry)	CH-302	Physical chemistry-III	2+0+0	2	10	40	50	3
Core Course-XI (Chemistry)	CH-303	Organic chemistry-III	2+0+0	2	10	40	50	3
Core Course-XII (Chemistry)	CH-304	Chemistry practical-III	0+0+2	4	----------	50	50	6
Total Credits/Marks in semester-III			**26**				**650**	

*Internal Assessment marks

20% marks in each theory paper shall be reserved for Internal Assessment. The following parameters (with weightage of each) forming the basis of award of Internal Assessment:-

(i) One test/Seminar for each paper (one period duration) : 50%

(ii) One Assignment for each paper : 25%

(iii) Attendance : 25%

4th Semester

Course Type & No.	Course Code	Course Nomenclature	Credits (L+T+P)	Teaching Hours per week	Maximum Marks			Duration of Examination (Hrs.)
					Internal Assessment*	End-semester Examination	Total	
Skill Enhancement Course-II (Physics)	SEC- 401	(A) Applied Optics (B) Renewable Energy & Energy Harvesting	2+0+0	2	10	40	50	3
Core Course-IX (Physics)	EP-401	Wave & Optics	3+0+0	3	15	60	75	3
Core Course-X (Physics)	EP-402	Quantum Mechanics	3+0+0	3	15	60	75	3
Core Course-XI (Physics)	EP-403	Physics Practical-IV	0+0+2	4	---------	50	50	3
Core Course-IX (Mathematics)	MT-401	Abstract Algebra	3+0+0	3	15	60	75	3
Core Course-X (Mathematics)	MT-402	Numerical Analysis	3+0+0	3	15	60	75	3
Core Course-XI (Mathematics)	MT-403	Mathematics Practical-IV	0+0+2	4	----------	50	50	3
Core Course-XIII (Chemistry)	CH-401	Inorganic chemistry-IV	2+0+0	2	10	40	50	3
Core Course-XIV (Chemistry)	CH-402	Physical chemistry-IV	2+0+0	2	10	40	50	3
Core Course-XV (Chemistry)	CH-403	Organic chemistry-IV	2+0+0	2	10	40	50	3
Core Course-XVI (Chemistry)	CH-404	Chemistry practical-IV	0+0+2	4	----------	50	50	6
Total Credits/Marks in semester-IV			**26**				**650**	

M. Sc. Engineering Physics
Semester – III
Subject: Mathematics
(Course Type- Skill Enhancement, Course Code: SEC-301)
Nomenclature: Programming Skills with C
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. The examiner will set 8 questions asking two questions from each unit by taking course outcomes (COs) into consideration.
2. The examinee will be required to attempt 5 questions, selecting at least one question from each unit.

Unit-I:

Overview of C: Introduction and importance of C, Basic structure of a C program, Executing a C program. Elements of C: C character set, C tokens, Identifiers and keywords, Constants and Variables, Data types, Assignment statement, Symbolic constants.

Operators & Expression: Arithmetic, relational, logical, bitwise, unary, assignment, conditional operators and special operators. Arithmetic expressions, evaluation of arithmetic expression, type casting and conversion, operator hierarchy & associativity.

Unit-II

Input/output: Unformatted & formatted I/O function, Input functions viz. scanf(), getch(), getche(), getchar(), gets(); output functions viz. printf(), putch(), putchar(), puts().

Decision making & branching: Decision making with IF statement, IF…ELSE statement, Nested IF statement, ELSE-IF ladder, SWITCH statement, GOTO statement.

Unit-III:

Decision making & looping: For, while, and do-while loop, jumps in loops, break, continue statement.

Arrays: Definition, types, initialization, processing an array.

Unit-IV:

Character Strings: Declaration and initialization, Reading and writing, Arithmetic Operations on Characters, Putting strings together, Comparison of strings, String handling Functions.

User defined functions: Need for user defined functions, form of C functions, return values and their types, calling a function, category of functions, nesting of functions, Recursion, Functions with arrays, scope of variables in functions, ANSI C functions.

Course Outcomes: This course will enable the students to:

1. Familiarize with C programming language. Learn elements of C, data types, constants and variables, operations and operators, statements and expressions. Use these tools for writing C programs.
2. Learn Input/ Output functions in C, to write reading and writing statements in C, decision making statements and structures in C. Apply this knowledge to use as tools in writing C programs.
3. Understand loops and arrays, their types, characteristics and structures. Attain the skill to write C programs which involve arrays and multiple iterations.
4. Learn strings of characters, their declaration, input/ output, operations on strings and functions which handle strings. Learn declaration, types and calling of user defined functions in C.
5. Be ready to attain the skills of programming by making use of tools and knowledge mentioned in the Cos 1 to 4.

Recommended Text Books:

1. B.W. Kernighan and D.M. Ritchie : The C Programming Language, 2nd Edition
2. V. Rajaraman : Programming in C, Prentice Hall of India, 1994
3. Byron S. Gottfried : Theory and Problems of Programming with C, Tata McGraw-Hill Publishing Co. Ltd., 1998
4. Programming in ANSI C, E. Balagurusamy, Tata McGraw-Hill Publishing Co. Ltd.

M. Sc. Engineering Physics
Semester-III
Subject: Physics
(Course Type-Core Course, Course Code: EP-301)
Nomenclature: Thermal Physics
No. of credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1.Nine questions will be set in total.
2.Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3.Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4.20% numerical problems are to be set.
5.Use of scientific (non-programmable) calculator is allowed.

UNIT-I

KINETIC THEORY OF GASES-I

Assumption of Kinetic theory of gases, pressure of an ideal gas (with derivation), Kinetic interpretation of Temperature, Ideal Gas equation, Degree of freedom, Law of equipartition of energy and its application for specific heat of gases, Real gases, Vander Wall's equation, Brownian motion (Qualitative).

(15 Lectures)

UNIT-II

KINETIC THEORY OF GASES-II

Maxwell's distribution of speed and velocities (derivation required), Experimental verification of Maxwell's law of speed distribution: most probable speed, average and r.m.s. speed, Mean free path, Transport of energy and momentum, Diffusion of gases.

(15 Lectures)

UNIT-III

THERMODYNAMICS-I

Thermodynamic system and Zeroth law of thermodynamics, First law of thermodynamics and its limitations, Reversible and irreversible process, Second law of thermodynamics and its significance, Carnot theorem, Absolute scale of temperature, Absolute Zero and magnitude of each division on work scale and perfect gas scale, Joule's free expansion, Joule Thomson effect, Joule-Thomson (Porous plug) experiment, conclusions and explanation, analytical treatment of Joule Thomson effect, Entropy, calculations of entropy of reversible and irreversible process, T-S diagram, entropy of a perfect gas, Nernst heat law (third law of thermodynamics), Liquefaction of gases, (oxygen, air, hydrogen and helium) solidification of helium below 4K, Cooling by adiabatic demagnetization.

(15 Lectures)

UNIT-IV

THERMODYNAMICS-II

Derivation of Clausius-Clapeyron and Clausius latent heat equations and their significance, specific heat of saturated vapours, phase diagram and triple point of a substance, development of Maxwell thermodynamical relations, Thermodynamical functions: Internal energy (U), Helmholtz function (F), Enthalpy (H), Gibbs function (G) and the relations between them, derivation of Maxwell thermodynamical relations from thermodynamical functions, Application of Maxwell relations: relations between two specific heats of gas, Derivation of Clausius-Clapeyron and Clausius equation, variation of intrinsic energy with volume for (i) perfect gas (ii) Vander wall gas (iii) solids and liquids, derivation of Stefan's law, adiabatic compression and expansion of gas & deduction of theory of Joule Thomson effect.

(15 Lectures)

CO No. **Course code (EP-301): Thermal Physics**

After successfully completing the course, student will be able to:

CO-1 Learn about Kinetic interpretation of Temperature, the real gas equations, Van der Waal equation of state and Brownian motion.

CO-2 Learn the basic aspects of kinetic theory of gases, Maxwell-Boltzman distribution law, equitation of energies, mean free path of molecular collisions, viscosity, thermal conductivity, diffusion.

CO-3 Understand the basic concepts of thermodynamics, the first and the second law of thermodynamics, Joule Thomson effect, Joule-Thomson (Porous plug) experiment, the concept of entropy and the associated theorems, calculations of entropy of reversible & irreversible process, T-S diagram and Nernst heat law (third law of thermodynamics).

CO-4 Derive the Clausius-Clapeyron and Clausius latent heat equations and understand their significance. The students will also be able to learn about Maxwell's thermodynamic relations their physical interpretations.

REFERENCES

1. Thermal Physics and Statistical Mechanics, S.K. Roy, New Age International Publishers, New Delhi
2. Thermodynamics and Statistical Physics, J.K. Sharma and K.K. Sarkar, Himalaya Publishing House, Bombay
3. Introduction to Thermodynamics and its Applications, Stowe Keith, University Press (India) Pvt. Ltd, Hyderabad
4. Introductory Thermodynamics, Pierre Infelta, BrownWalker Press, Boca Ratan, Florida
5. Fundamentals of Thermodynamics, J. K. Johnson, University of Pittsburgh 2009
6. Thermodynamics and Its Applications, Jefferson Tester, Michael Modell, 3rd Edition
7. Thermodynamics, Statistical Thermodynamics & Kinetics, Thomas Engel, Philip Reid, 2nd Edition

M. Sc. Engineering Physics
Semester-III
Subject: Physics
(Course Type-Core Course, Course Code: EP-302)
Nomenclature: Statistical Mechanics
No. of credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4. 20% numerical problems are to be set.
5. Use of scientific (non-programmable) calculator is allowed.

UNIT-I

STATISTICAL PHYSICS-I

Microscopic and Macroscopic systems, events-mutually exclusive, dependent and independent. Probability, statistical probability, A-priori Probability and relation between them, probability theorems, some probability considerations, combinations possessing maximum probability, combination possessing minimum probability, Tossing of 2,3 and any number of Coins, Permutations and combinations, distributions of N (for N= 2,3,4) distinguishable and indistinguishable particles in two boxes of equal size, Micro and Macro states, Thermodynamical probability, Constraints and Accessible states, Statistical fluctuations, general distribution of distinguishable particles in compartments of different sizes, Condition of equilibrium between two systems in thermal contact-- β parameter, Entropy and Probability (Boltzmann's relation).

(15 Lectures)

UNIT-II

STATISTICAL PHYSICS-II

Postulates of statistical physics, Phase space, Division of Phase space into cells, three kinds of statistics, basic approach in three statistics. M. B. statistics applied to an ideal gas in equilibrium- energy distribution law (including evaluation of σ and β), speed distribution law & velocity distribution law. Expression for average speed, r.m.s. speed, average velocity, r. m. s. velocity, most probable energy & mean energy for Maxwellian distribution.

(15 Lectures)

UNIT-III

QUANTUM STATISTICS

Need for Quantum Statistics: Bose-Einstein energy distribution law, Application of B.E. statistics to Planck's radiation law B.E. gas, Degeneracy and B.E. Condensation, Fermi-Dirac energy distribution law, F.D. gas and Degeneracy, Fermi energy and Fermi temperature, Fermi Dirac energy distribution law, Fermi Dirac gas and degeneracy, Fermi energy and Fermi temperature, Fermi Dirac energy distribution law for electron gas in metals, Zero point energy, Zero point pressure and average speed (at 0 K) of electron gas, Specific heat anomaly of metals and its solution. M.B. distribution as a limiting case of B.E. and F.D. distributions, Comparison of three statistics.

(15 Lectures)

UNIT-IV

THEORY OF SPECIFIC HEAT OF SOLIDS

Dulong and Petit law. Derivation of Dulong and Petit law from classical physics, Specific heat at low temperature, Einstein theory of specific heat, Criticism of Einstein theory, Debye model of specific heat of solids, success and shortcomings of Debye theory, comparison of Einstein and Debye theories,

(15 Lectures)

CO No. **Course code (EP-302): Statistical Mechanics**

After successfully completing the course, student will be able to:

CO-1 Understand the concepts of microstate, macrostate, thermodynamic probability and also understand the studies of particles with their distinguishably or indistinguishably nature and conditions which lead to the three different distribution laws e.g. Maxwell-Boltzmann distribution, Bose-Einstein distribution and Fermi-Dirac distribution laws of particles.

CO-2 Learn the basic Postulates of statistical physics, Phase space, Division of Phase space into cells and be able to derive the expression for average speed, r.m.s. speed, average velocity, r. m. s. velocity, most probable energy & mean energy for Maxwellian distribution.

CO-3 Understand the need and application of Quantum Statistics: Bose-Einstein & Fermi-Dirac statistics and be able to articulate the connection as well as dichotomy between classical statistical mechanics and quantum statistical mechanics.

CO-4 Learn and understand the different law's and theory of specific heat of solids and their significance.

REFERENCES

1. Statistical Mechanics, S. Prakash and J.P. Agarwal, Kedar Nath Ram Nath & Co, Meerurt
2. Statistical Physics "Berkeley Physics Course. Vol. 5", Reif, Mc Graw Hill Book Co. Ltd., New Delhi
3. Statistical Mechanics, D.A. Mc Quarrie, Viva Books Pvt Ltd., New Delhi
4. Classical and Statistical Thermodynamics, Hanna A. Rizk, Narosa Publishing House, New Delhi

M. Sc. Engineering Physics
Semester-III
Subject: Physics
(Course Type- Core Course, Course Code: EP-303)
Nomenclature: Physics Practical-III
Credits: 2

Max. Marks: 50
Time: 3 hrs.

Special Note: -

1. Do any eight experiments from the given list of experiments.
2. The students are required to calculate the error involved in a particular experiment.
3. The Practical examination will be held in a single session of 3 hours.

Distribution of Marks:

Experiment	25 marks
Viva- voce	15 marks
Lab Record	10 marks
Total	50 marks

LIST OF EXPERIMENTS

1. Measurement of Planck constant using black body radiation.
2. To determine Stefan's Constant.
3. To determine the coefficient of thermal conductivity of copper by Searle's Apparatus.
4. To determine the thermal conductivity of bad conductor by Lee and Charlton's disc method.
5. To determine the temperature co-efficient of resistance by platinum resistance thermometer.
6. To study the variation of thermo e.m.f. across two junctions of a thermocouple with temperature.
7. To calibrate Resistance Temperature Device (RTD) using Null Method/Off-Balance Bridge.
8. To determine Mechanical Equivalent of Heat by Callender and Barne's contant flow method.
9. To draw a calibration curve for a thermocouple.

CO No.	**Course code (EP-303) : Physics Practical-III**
	After successfully completing the course, student will be able to:
CO-1	Hands on experience with different instruments and appreciate the beauty of different concepts and related experiments in Physics.
CO-2	Verify some fundamental principles, effects and concepts of physics through Experiments.
CO-3	Perform basic experiments in thermal Physics, viz., determinations of Stefan's constant, coefficient of thermal conductivity, temperature coefficient of resistant, variation of thermo-emf of a thermocouple with temperature difference at its two junctions and calibration of a thermocouple.

CO-4 Learn to present observations, results and analysis in suitable and presentable form.

REFERENCES

1. B.Sc. Practical Physics, C.L. Arora, S. Chand Publisher, New Delhi
2. Advanced Level Practical Physics, M. Nelkon and Ogborn, Henemann Education Books Ltd., New Delhi
3. Practical Physics, S.S. Srivastava and M.K. Gupta, Atma Ram & Sons, Delhi
4. Practical Physics, S.L. Gupta and V. Kumar, Pragati Prakashan Meerut
5. Modern Approach to Practical Physics, R.K. Singla, Modern Publishers, Jalandhar
6. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, Asia Publishing House.

M. Sc. Engineering Physics
Semester – III
Subject: Mathematics
(Course Type-Core, Course Code: MT-301)
Nomenclature: Real Analysis-I
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. The examiner will set 8 questions asking two questions from each unit by taking course outcomes (COs) into consideration.
2. The examinee will be required to attempt 5 questions, selecting at least one question from each unit.

Unit-I:

Finite and infinite sets, countable and uncountable sets, bounded and unbounded sets in $\mathbb{R}$. Least upper bound (supremum), greatest lower bound (infimum) of a set and their properties. The set of real numbers ($\mathbb{R}$) as an ordered field, Least upper bound properties of $\mathbb{R}$, Metric property and completeness of $\mathbb{R}$. Archimedean property of $\mathbb{R}$. Neighbourhood of a point, interior points, isolated points, limit points. Open sets, closed sets, interior of a set, closure of a set in real numbers and their properties. Bolzano-Weierstrass theorem.

Unit-II:

Sequences in $\mathbb{R}$, Convergent sequence and its limit, Limit theorems, Bounded and monotonic sequences in $\mathbb{R}$. Cauchy's theorem on limits, Monotone convergence theorem, Limit superior and limit inferior, Cauchy sequence, Cauchy's convergence criterion. Subsequences, Subsequential limits.

Unit-III:

Infinite series: Convergence and divergence of Infinite Series, Comparison Tests of positive terms Infinite series, Cauchy's general principle of Convergence of series, Convergence and divergence of geometric series, Hyper Harmonic series or p-series. D-Alembert's ratio test, Raabe's test, Logarithmic test, Abel's test, Cauchy's nth root test, Gauss Test, Cauchy's integral test, Cauchy's condensation test.

Unit-IV:

Alternating series, Absolute and conditional convergence, Leibniz test, Rearrangements of series.

Pointwise and uniform convergence of sequence and series of functions, M_n-test, Weierstrass's M-test. Uniform continuity. Uniform convergence and continuity.

Course Outcomes: This course will enable the students to:

1. Understand basic concepts of real number system and set theory. Preliminary results on neighbourhood of a point, interior and limit points, open sets, closed sets etc.
2. Learn real sequences, their limit, boundedness and convergence. To find convergence and divergence of a sequence. To understand Cauchy sequence, subsequence and to prove related theorems.
3. Understand infinite series and its basic properties. Attain skills to determine convergence of a series of real numbers by applying various tests.
4. Understand absolute and conditional convergence of alternating series and related tests. Learn the basic concepts of pointwise convergence and uniform convergence of sequence and series of functions.

Recommended Text Books:

1. T. M. Apostol (2008). *Mathematical Analysis: A Modern Approach to Advanced Calculus*. Pearson Education.
2. Charalambos D. Aliprantis &) Owen Burkinshaw1998). *Principles of Real Analysis* (3rd edition). Academic Press.
3. Robert G. Bartle & Donald R. Sherbert (2015). *Introduction to Real Analysis* (4th edition).Wiley India.
4. Gerald G. Bilodeau, Paul R. Thie & G. E. Keough (2015). *An Introduction to Analysis* (2nd edition), Jones and Bartlett India Pvt. Ltd.
5. E. Hewitt & K. Stromberg (2013). *Real and Abstract Analysis.* Springer-Verlag.
6. K. A. Ross (2013). *Elementary Analysis***:** *The Theory of Calculus* (2nd edition). Springer.
7. Walter Rudin. *Principles of Mathematical Analysis* (3rd edition), Tata McGraw Hill.

M. Sc. Engineering Physics
Semester – III
Subject: Mathematics
(Course Type-Core, Course Code: MT-302)
Nomenclature: Mechanics – I
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. The examiner will set 8 questions asking two questions from each unit by taking course outcomes (COs) into consideration.
2. The examinee will be required to attempt 5 questions, selecting at least one question from each unit.

Unit-I:

Composition and resolution of forces, Parallel forces, Couples, Moment of force and a couple about a point and a line, Equilibrium of a particle and of a rigid body acted on by forces in one plane.

Unit-II:

Concept of friction, Laws of friction, Problems of equilibrium under forces including friction. Concepts of centre of mass and centre of gravity, Centre of gravity of an uniform arc, plane area and solids of revolution.

Unit-III:

Velocity and acceleration of a particle along a curve: radial and transverse components, tangential and normal components, Relative velocity and acceleration, Angular velocity and acceleration. Newton's laws of motion. Simple harmonic motion and elastic strings.

Unit-IV:

Work, Power and Energy. Projectile motion. Kepler's laws of planetary motion.

Course Outcomes: This course will enable the students to:

1. Understand basic concepts of forces, their resultant and moment; couples and their moments. Conditions for the equilibrium of particles/rigid body acted upon by various planar forces. To attain the problem solving skill for scientific problems.
2. Learn the concepts of friction and laws of friction, centre of mass and centre of gravity and to solve problems related to these concepts.
3. Learn fundamentals of dynamics like velocity, acceleration, angular velocity and acceleration, Newton's laws of motion, simple harmonic motion and to develop the skill of solving simple dynamical problems.
4. Understand concepts of work, power, energy and projectile motion and to solve related problems. Learn about Kepler's laws of the planetary motions.

Recommended Text Books:

1. R. S. Varma (1962). *A Text Book of Statics*. Pothishala Pvt. Ltd.
2. P.L. Srivastava (1964). *Elementary Dynamics*. Ram Narain Lal, Beni Prasad Publishers Allahabad.
3. J. L. Synge & B. A. Griffith (1949). *Principles of Mechanics*. McGraw-Hill.
4. S.L. Loney (1995). *An Elementary Treatise on Statics,* Radha Publishing House.
5. S.L. Loney (2006). *An Elementary Treatise on the Dynamics of a Particle and of Rigid Bodies*. Read Books.
6. A. S. Ramsey (2009). *Statics*. Cambridge University Press.
7. A. S. Ramsey (2009). *Dynamics*. Cambridge University Press.
8. A.P. Roberts (2003). *Statics and Dynamics with Background in Mathematics*. Cambridge University Press.

M. Sc. Engineering Physics
Semester-III
Subject: Mathematics
(Course Type-Core, Course Code: MT-303)
Nomenclature: Mathematics practical-III
No. of Credits: 2

Max. Marks: 50
Time: 3 hrs.

Special Note: -

1. The examiner will set 4 questions at the time of practical examination by taking course outcomes (COs) into consideration.
2. The examinee will be required to write two programs and execute one program successfully.
3. The evaluation will be done on the basis of practical record, viva-voce, write up and execution of the program.
4. The Practical examination will be held in a single session of 3 hours.

Distribution of Marks:

Experiment	25 marks
Viva- voce	15 marks
Lab Record	10 marks
Total	50 marks

1. To find greatest and smallest of three numbers.
2. To find the roots of a quadratic equation.
3. To check whether a given year is leap year or not.
4. To check a given number for being palindrome or Armstrong.
5. To generate Fibonacci sequence.
6. To find sum of cosine series and sine series up to n terms.
7. To find sum of any n numbers.
8. To find transpose of a matrix.
9. To find sum and product of two matrices.
10. To find area of circle, triangle and rectangle depending on choice using switch statement.
11. To find factorial of a number using
    (a) iteration (b) function.
12. To find Greatest Common Divisor of two numbers using recursion.
13. Write a function to check a given number for being prime number. Use the same to generate the prime numbers less than or equal to a given number m.
14. To search the element in an array of n elements using
    (a) Linear search method
    (b) Binary search.
15. To sort given numbers in ascending/descending order using
    (a) selection sort (b) bubble sort

16. To prepare electricity bill.
17. To find gross salary of an employee.
18. To perform following operations on strings:
    (a) Show address of each character in string
    (b) Concatenate two strings
    (c) Compare two strings
    (e) Calculate the length of strings
    (f) Convert all lowercase characters to uppercase
    (g) Convert all uppercase characters to lowercase.
    (h) Calculate number of vowels
    (i) Reverse the string
19. To arrange string data (name of students) in alphabetical order using bubble sort.
20. To calculate the Letter grades and Grade points of a student according to marks obtained in 4 subjects on the basis of following table:

Marks	Grade Point	Letter Grade
85-100	10	O (Outstanding)
75-84	9	A+ (Excellent)
65-74	8	A (Very Good)
55-64	7	B+ (Good)
50-54	6	B (Above Average)
41-49	5	C (Average)
40	4	P (Pass)
<40	0	F (Fail)

Course Outcomes: This course will enable the students to:

1. Attain skill of writing and executing elementary programs in the programming language C.
2. Have hands-on experience to write, enter, run and debug programs in C for different mathematical and other practical problems of daily or scientific use.

M. Sc. Engineering Physics
Semester – III
Subject: Chemistry
(Course type-Core, Course Code: CH-301)
Nomenclature: Inorganic Chemistry-III
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

Section – A (15 hrs)

Chemistry of d-Block elements

Definition of transition elements, position in the periodic table, General characteristic properties of d-Block elements, Comparison of properties of 3d elements with 4d and 5d elements with reference only to ionic radii, oxidation state, magnetic and spectral properties and stereochemistry. Stability of various oxidation states and e.m.f (Latimer and Frost diagrams), Structure and properties of some compounds of transition elements- TiO_2, $VOCl_2$, $FeCl_3$, $CuCl_2$ and $Ni(CO)_4$.

Coordination Compounds

Werner's theory of coordination compounds, effective atomic number, chelates, nomenclature of coordination compounds, Isomerism in coordination compounds, valence bond theory of transition metal complexes.

Section – B (15 hrs)

Chemistry of f-Block elements

Lanthanides: Electronic structure, oxidation states, magnetic properties, complex formation, colour, ionic radii and lanthanide contraction, occurrence, separation of lanthanides, Lanthanide compounds. Actinides: General characteristics of actinides, chemistry of separation of Np, Pu and Am from uranium, Transuranic elements, comparison of properties of Lanthanides and actinides with transition elements.

Course Outcomes:

CO1: Have good knowledge about d-block elements particularly of transition elements

CO2: To study the comparison between 3d elements with 4d and 5d elements with reference to ionic radii, oxidation state, magnetic properties and spectral properties some compounds of transition elements

CO3: To know about position of f-block elements in periodic table and their general characteristics

CO4: To study the occurrence and separation of lanthanides and lanthanide compounds

CO5: Have knowledge of actinides their existence and general properties

CO6: To compare the properties of Lanthanides and actinides with transition elements.

CO7: To know about the basic concepts of coordination chemistry like EAN, Werner theory of coordination and isomerism in coordination complexes.

Reference Books:

- Lee, J.D. *Concise Inorganic Chemistry* ELBS, 1991.
- Cotton, F.A., Wilkinson, G. &Gaus, P.L. *Basic Inorganic Chemistry*, 3rd ed., Wiley.
- Douglas, B.E., McDaniel, D.H. & Alexander, J.J. *Concepts and Models in Inorganic Chemistry*, John Wiley & Sons.
- Huheey, J.E., Keiter, E.A., Keiter, R.L. & Medhi, O.K. *Inorganic Chemistry:Principles of Structure and Reactivity*, Pearson Education India, 2006.
- Pradeep's inorganic chemistry, Volume II
- R Chand, inorganic chemistry, Volume II
- Modern publications,inorganic chemistry, Volume II

M. Sc. Engineering Physics
Semester – III
Subject: Chemistry
(Course Type-Core, Course Code: CH-302)
Nomenclature: Physical Chemistry-III
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

Section–A (15 Hours)

Energetics

Recapitulation of thermodynamics and the Laws of Thermodynamics.Joule–Thomson coefficient for ideal gas and real gas and inversion temperature. Important principles and definitions of thermochemistry. Concept of standard state and standard enthalpies of formations, integral and differential enthalpies of solution and dilution. Calculation of bond energy, bond dissociation energy and resonance energy from thermochemical data. Variation of enthalpy of a reaction with temperature – Kirchhoff's equation.Statement of Third Law of thermodynamics and calculation of absolute entropies of substances.

Electrochemistry-II

Concentration cells with transference and without transference. Liquid junction potential and salt bridge.pH determination using hydrogen electrode and quinhydrone electrode.Potentiometric titrations -qualitative treatment (acid-base and oxidation-reduction only).

Section-B (15 Hours)

Chemical Equilibrium

Equilibrium constant and free energy, concept of chemical potential. Thermodynamic derivation of the law of chemical equilibrium.Temperature dependence of equilibrium constant. Distinction between ΔG and ΔG^o, Le Chatelier's principle.Relationships between K_p, $K_c$and K_x for reactions involving ideal gases. Clausius–Clapeyron equation and its applications. Nernst distribution law and its applications.

Phase Equilibrium

Phases, components and degrees of freedom of a system, criteria of phase equilibrium. Gibbs Phase Rule and its thermodynamic derivation. Derivation of Clausius – Clapeyron equation and its importance in phase equilibria. Phase diagrams of one-component systems (water and sulphur) and two component systems involving eutectics (Pb-Ag system only), desilverisation of lead.

Course Outcomes :

CO1: To know about the laws and concepts of chemical thermodynamics and their applications in thermochemical calculations

CO2: To have knowledge about electrolytic concentration cells with and without transference and their EMF calculation, applications of the concept to determine liquid junction potential, pH determination using potentiometry and potentiometric titrations

CO3: To understand the basic terms related to chemical equilibrium and derive the law thermodynamically, deduce relation between various equilibrium constants and determining partition coefficient of a solvent dissolved in two immiscible solvents

CO4: To have good knowledge about fundamental concepts of phase equilibrium and their applications in studying one and two-component systems including eutectics

Reference Books:

- Barrow, G.M. *Physical Chemistry* Tata McGraw-Hill (2007).
- Castellan, G.W. *Physical Chemistry* 4th Ed. Narosa (2004).
- B. R. Puri, Madan S. Pathania , L. R. Sharma*Principles of Physical Chemistry* Vishal Publications
- Peter Atkins , Julio de Paula , James Keeler *Atkins' Physical Chemistry*, Oxford University Press
- S.Glasstone, *An Introduction To Electrochemistry*, Affiliated East West Press Pvt. Limited, New Delhi
- S. Glasstone *Thermodynamics For Chemists*

M. Sc. Engineering Physics
Semester – III
Subject: Chemistry
(Course Type-Core, Course Code: CH-303)
Nomenclature: Organic Chemistry-III
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

Section-A (15 h)

Ultraviolet (UV) absorption spectroscopy

Absorption laws (Beer-Lambert law), molar absorptivity, presentation and analysis of UV spectra, types of electronic transitions, effect of conjugation. Concept of chromophore and auxochrome. Bathochromic, hypsochromic, hyperchromic and hypochromic shifts. UV spectra of conjugated enes and enones,Woodward-Fieser rules, calculation of λmax of simple conjugated dienes and αβ-unsaturated ketones (upto one DB extension)

Infrared (IR) absorption spectroscopy

Molecular vibrations, Hooke's law, selection rules, intensity and position of IR bands, measurement of IR spectrum, fingerprint region, characteristic absorptions of various functional groups and interpretation of IR spectra of simple organic compounds (Acetaldehyde, acetone, nitrobenzene, methylbenzoate, phenylacetate, aniline, phenol).

Amines

Structure and nomenclature of amines, physical properties. Separation of a mixture of primary, secondary and tertiary amines. Structural features affecting basicity of amines.

Preparation of alkyl and aryl amines (reduction of nitro compounds, nitriles, reductive amination of aldehydic and ketonic compounds. Gabriel phthalimide reaction, Hofmann

bromamide reaction. Electrophilic aromatic substitution in aryl amines, reactions of amines with nitrous acid.

Section-B (15 h)

Diazonium Salts

Mechanism of diazotization, structure of benzene diazonium chloride, Replacement of diazo group by H, OH, F, Cl, Br, I, NO_2 and CN groups, reduction of diazonium salts to hydrazines and coupling reaction

Aldehydes and Ketones

Nomenclature and structure of the carbonyl group. Synthesis of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides, advantage of oxidation of alcohols with chromium trioxide (Sarett reagent) pyridinium chlorochromate (PCC) and pyridinium dichromate. Physical properties, Comparison of reactivities of aldehydes and ketones. Mechanism of nucleophilic additions to carbonyl group with particular emphasis on benzoin, aldol, Perkin and Knoevenagel condensations. Condensation with ammonia and its derivatives. Wittig reaction. Mannich reaction. Oxidation of aldehydes, Baeyer– Villiger oxidation of ketones, Cannizzaro reaction. MPV, Clemmensen, Wolff-Kishner, LiAlH4 and NaBH4 reductions.

Enolates

Keto-enol tautomerism of ethyl acetoacetate, Acidity of α-hydrogens, alkylation of diethyl malonate (synthesis of butyric acid, isovaleric acid) and ethyl acetoacetate. Synthesis of ethyl acetoacetate: the Claisen condensation.

Course Outcomes:

CO1: Have knowledge of various absorption laws (Beer-Lambert law), molar absorptivity, analysis UV spectra and application of UV spectroscopy in structure elucidation

CO2: Able To describe absorptions of various functional groups and applications of IR spectroscopy

CO3: To synthesize and know reactions of amines

CO4: To discuss synthetic application of diazonium salt

CO5: Know about the preparation of aliphatic, aromatic aldehydes and ketones and various important name reactions of aldehydes and ketones and

CO6: Get knowledge about the acidity of α-hydrogens of diethyl malonate, ethyl acetoacetate and the synthesis and Keto-enol tautomerism of ethyl acetoacetate

Reference Books:

- Brian Smith: Infrared Spectral Interpretations: A Systematic Approach.
- Kotz, J.C., Treichel, P.M. & Townsend, J.R. *General Chemistry*, Cengage Learning India Pvt. Ltd.: New Delhi (2009).
- Mahan, B.H. *University Chemistry*, 3rd Ed. Narosa (1998).
- Petrucci, R.H. *General Chemistry*, 5th Ed., Macmillan Publishing Co.: New York (1985).
- Morrison, R. T. & Boyd, R. N. *Organic Chemistry*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
- Finar, I. L. *Organic Chemistry* (*Volume 1*), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
- Finar, I. L. *Organic Chemistry* (*Volume 2)*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
- Pradeep's organic chemistry, Volume II & III
- R Chand, organic chemistry, Volume II & III
- Modern publications, organic chemistry, Volume II & III
- New Age International (P) Ltd, Publishers, Volume II

M. Sc. Engineering Physics
Semester-III
Subject: Chemistry
(Course Type-Core, Course Code: CH-304)
Nomenclature: Chemistry practical-III
Credits: 2

Max. Marks: 50
Time: 6hrs.

Special Note: -

The Practical examination will be held in two sessions of 3 hours each & the students are required to perform two experiments during the examination.

Distribution of Marks:

Experiment	15+15 marks
Viva- voce	5+5 marks
Lab Record	10 marks
Total	50 marks

1. Colorimetry:
   To verify Beer - Lambert law for KMnO4 /K2Cr2O7 and determine the concentration of the given KMnO4 /K2Cr2O7 solution.
2. Preparations: Preparation of Cuprous chloride, tetra ammine cupric sulphate, chrome alum, potassium trioxalatochromate(III) and Nickel Hexammine chloride.
3. To determine the Critical Solution Temperature of phenol – water system.
4. To determine the solubility of benzoic acid at various temperatures and to determine the ▲H of the dissolution process.
5. To determine the enthalpy of neutralisation of a weak acid/weak base vs. strong base/strong acid and determine the enthalpy of ionisation of the weak acid/weak base.
6. To determine the enthalpy of solution of solid calcium chloride.
7. To study the distribution of iodine between CCl4 and water.
8. Determine rate constant of hydrolysis of ethyl acetate.

Course Outcomes:

CO1: To verify the Beer's lambert law using potassium permanganate and potassium dichromate and also quantitation of these analytes

CO2: To prepare simple coordination complexes viz.Cuprous chloride, tetra-ammine cupric sulphate, chrome alum, potassium trioxalatochromate(III) and Nickel Hexammine chloride

CO3: Able to find out critical solution temperature of phenol water system

CO4: To determine the enthalpy of solution of calcium chloride enthalpy of neutralization and ionization using different combinations of acids and bases

CO5: To perform hydrolysis of ethyl acetate and find out rate constant of the reaction

M. Sc. Engineering Physics
Semester – IV
Subject: Physics
(Course type-Skill Enhancement, Course Code: SEC-401(A))
Nomenclature: Applied Optics
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine Questions will be set in total and attempt five questions in all.
2. Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have at least five parts and the answer should be in brief but not in Yes/ No.
3. For more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts.

UNIT-I

INTRODUCTION TO LASER

Spontaneous and Stimulated Absorption and Emission of radiation, main features of a laser: Directionality, high intensity, high degree of coherence, spatial and temporal coherence, Einstein's coefficients and possibility of amplification, Kinetic of optical absorption, Population inversion: A necessary condition for light amplification, resonant cavity and laser pumping.

(8 Lectures)

UNIT-II

LASER SYSTEM

Laser rate equation; Three and Four level Lasers. Principle, Construction & working of He-Ne Laser, Ruby Laser, Semiconductor junction Laser, N_2-Laser, CO_2 laser.

(7 Lectures)

UNIT-III

LASER APPLICATIONS

Spatial Frequency Filtering, Holography, Laser induced Fusion, Lasers in Isotope Separation. Application of Laser Technology in material processing (Drilling, Cutting, Welding), Medicine, Industry and Military.

(7Lectures)

UNIT-VI

THE OPTICAL FIBER

Optical fibres and their properties, Principal of light propagation through an optical fibre, The numerical aperture, Attenuation in optical fibre and attenuation limit, Single mode and multimode fibres, Fibre optic sensors: Fibre Bragg Grating.

(8 Lectures)

CO No.	Course code (SEC-401(A)) : Applied Optics
	After successfully completing the course, student will be able to:
CO-1	Familiar with optical phenomena and different concepts related laser physics.
CO-2	Qualitative understanding of basic lasing mechanism, types of Lasers, characteristics of Laser Light, types of Lasers.
CO-3	Understand and appreciate the applications of Lasers in developing LED, Holography, in materials processing, in Medicine, Industry and Military.
CO-4	Have the idea of optical fibres, their properties and principle of propagation of electromagnetic waves through optical fibres.

REFERENCES

1. Optical Electronics, A.K. Ghatak and K. Thyagarajan, Cambridge University Press
2. Laser, Theory & Applications, K. Thyagarajan and A.K. Ghatak, Macmillan India limited
3. Lasers and Non-Linear Optics, B.B.Laud, New Age International (P) Ltd., Publishers, New Delhi
4. Lasers, Principles, Types and Applications, K.R. Nambiar, New Age International (P) Ltd., Publishers, New Delhi
5. Fundamental of optics, F. A. Jenkins & H. E. White, 1981, Tata McGraw Hill.
6. Optical Systems and Processes, Joseph Shamir, 2009, PHI Learning Pvt. Ltd.
7. Optoelectronic Devices and Systems, S.C. Gupta, 2005, PHI Learning Pvt. Ltd.
8. Optical Physics, A. Lipson, S.G. Lipson, H. Lipson, 4th Edn., 1996, Cambridge Univ. Press

M. Sc. Engineering Physics
Semester – IV
Subject: Physics
(Course type-Skill Enhancement, Course Code: SEC-401(B))
Nomenclature: Renewable Energy and Energy Harvesting
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine Questions will be set in total and attempt five questions in all.
2. Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have at least five parts and the answer should be in brief but not in Yes/ No.
3. For more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts.

UNIT-I

FOSSIL FUELS, ALTERNATE SOURCES OF ENERGY AND SOLAR ENERGY

Fossil fuels and Nuclear Energy, their limitation, need of renewable energy, non-conventional energy sources. An overview of developments in Offshore different types of energy. Solar Energy; its importance, storage of solar energy, solar pond, non -convective solar pond, applications of solar pond and solar energy, solar water heater, flat plate collector, solar distillation, solar cooker, solar green houses, solar cell, absorption air conditioning. Need and characteristics of photovoltaic (PV) systems.

(8 Lectures)

UNIT-II

OCEAN, GEOTHERMAL AND HYDRO ENERGY

Ocean Energy Potential against Wind and Solar, Wave Characteristics and Statistics, Wave Energy Devices. Tide characteristics and Statistics, Tide Energy Technologies, Ocean Thermal Energy, Osmotic Power, Ocean Bio-mass. Geothermal Energy: Geothermal Resources, Geothermal Technologies. Hydro Energy: Hydropower resources, hydropower technologies, environmental impact of hydro power sources.

(8 Lectures)

UNIT-IV

WIND AND PIEZOELECTRIC ENERGY HARVESTING

Wind Energy harvesting**;** Fundamentals of Wind energy, Wind Turbines and different electrical machines in wind turbines, Power electronic interfaces, and grid interconnection topologies. Piezoelectric Energy harvesting: Introduction, Physics and characteristics of piezoelectric effect, materials and mathematical description of piezoelectricity, piezoelectric parameters and modeling piezoelectric generators, piezoelectric energy harvesting applications.

(8 Lectures)

UNIT-IV

ELECTROMAGNETIC ENERGY HARVESTING

Linear Generators, Physics mathematical models, recent applications, Carbon captured technologies, cell, batteries, power consumption, Environmental issues and Renewable sources of energy, sustainability

(6 Lectures)

CO No. **Course code (SEC-401(B)) : Renewable Energy and Energy Harvesting**

After successfully completing the course, student will be able to:

CO-1 Learn not only the theories of the renewable sources of energy, but also to have hands-on experiences on them wherever possible.

CO-2 Learn about the potential of Ocean, Geothermal, hydrothermal energies and the related technologies and also about their impact on environment.

CO-3 Understand and appreciate the technology of wind and piezoelectric energy harvesting.

CO-4 Have the idea of electromagnetic energy harvesting through carbon- captured technologies like cells, batteries.

REFERENCES

1. Non-conventional energy sources - G.D Rai - Khanna Publishers, New Delhi

2. Solar energy - M P Agarwal, S. Chand and Co. Ltd., New Delhi

3. Solar energy - Suhas P Sukhative Tata McGraw Hill Publishing Company Ltd.

4. Godfrey Boyle, “Renewable Energy, Power for a sustainable future”, 2004, Oxford University Press, in association with The Open University.

5. Dr. P Jayakumar, Solar Energy: Resource Assesment Handbook, 2009

6. J. Balfour, M.Shaw and S. Jarosek, Photovoltaics, Lawrence J Goodrich (USA).

7. http://en.wikipedia.org/wiki/Renewable_energy

M. Sc. Engineering Physics
Semester-IV
Subject: Physics
(Course Type- Core course, Course Code: EP-401)
Nomenclature: Waves & Optics
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hours

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4. 20% numerical problems are to be set.
5. Use of scientific (non-programmable) calculator is allowed.

UNIT-I

INTERFERENCE

Interference by Division of Wave front: Young's double slit experiment, Coherence, Conditions of interference, Fresnel's biprism and its applications to determine the wavelength of sodium light and thickness of a mica sheet, phase change on reflection. Interference by Division of Amplitude: Plane parallel thin film, production of colors in thin films, classification of fringes in films, Interference due to transmitted light and reflected light, wedge shaped film, Newton's rings.

(15 Lectures)

UNIT-II

DIFFRACTION-I

Huygens-Fresnel's theory, Fresnel's assumptions, rectilinear propagation of light, Fresnel's half period zones, zone plate, diffraction at a straight edge, rectangular slit and diffraction at a circular aperature. Diffraction due to a narrow slit, diffraction due to a narrow wire.

(15 Lectures)

UNIT-III

DIFFRACTION- II

Fraunhoffer diffraction: one slit diffraction, two slit diffraction, N-slit diffraction, plane transmission grating spectrum, dispersive power of grating, limit of resolution, Rayleigh's criterion, resolving power of telescope and a grating.

(15 Lectures)

UNIT-IV

POLARIZATION

Polarization: Polarisation by reflection, refraction and scattering, Malus Law, Phenomenon of double refraction, Huygens's wave theory of double refraction (Normal and oblique incidence), Analysis of polarized Light. Nicol prism, Quarter wave plate and half wave plate, production and detection of (i) Plane polarized light (ii) Circularly polarized light and (iii) Elliptically polarized light. Optical activity, Fresnel's theory of optical rotation, Specific rotation, Polarimeters (half shade and Biquartz).

(15 Lectures)

CO No. **Course code (EP-401) : Waves & Optics**

After successfully completing the course, student will be able to:

CO-1 Have understanding of Interference - by Division of Wave front, by Division of Amplitude and Interference due to transmitted light & reflected light.

CO-2 Learn about Huygens-Fresnel's theory, diffraction at a straight edge and at a circular aperture, diffraction due to a narrow slit and due to a narrow wire.

CO-3 Understand and explain the Fraunhoffer diffraction, dispersive power of grating, Rayleigh's criterion and resolving power of telescope & a grating.

CO-4 Understand the theories and laws of polarization along with understanding of the production and detection of (i) Plane polarized light (ii) Circularly polarized light and (iii) Elliptically polarized light.

REFERENCES

1. Principles of Optics, M. Born and E. Wolf, Pergamaman Press
2. Fundamentals of Optics, Jenkins and White, McGraw Hill Book Co. Ltd., New Delhi
3. Optics, K.D. Muller, University Science Books, Mill ally California
4. An Introduction to Interferometery, Tolansky, John Wiley & Sons, New Delhi
5. Polarized Light Production and Use, Shurcliff, Harward University Press, Cambridge, M A (USA)
6. Refresher Course in Physics Vol. II, C.L. Arora, S Chand and Co, New Delhi

M. Sc. Engineering Physics
Semester-IV
Subject: Physics
(Course Type- Core course, Course Code: EP-402)
Nomenclature: Quantum Mechanics
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hours

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4. 20% numerical problems are to be set.
5. Use of scientific (non-programmable) calculator is allowed.

UNIT-I

THE ORIGIN QUANTUM PHYSICS

Overview, scale of quantum physics, boundary between classical and quantum phenomena: Blackbody radiation, Planck's quantum theory; Quantum theory of light, Photon, Photoelectric effect, Compton effect (theory and result), Frank-Hertz experiment, de-Broglie hypothesis. Davisson and Germer experiment, wave packet, phase velocity, group velocity and their relation. Heisenberg's uncertainty principle. Time energy and angular momentum, position uncertainty. Uncertainty principle from de Broglie wave. (Wave-particle duality). Gamma Ray Microscope, Electron diffraction from a slit.

(15 Lectures)

UNIT-II

THE SCHRODINGER WAVE EQUATION

Time dependent Schrodinger equation and dynamical evolution of a quantum state ; properties of Wave Function, Interpretation of Wave Function, probability and probability current densities in three dimensions; Condition for physical acceptability of Wave Functions. Normalization, Linearity and Superposition Principles, Eigenvalues and Eigenfunctions, Position, Linear momentum & Energy operators; commutator of position and linear momentum operators; Expectation values of position and linear momentum; Wave Function of a free Particle; Time-independent Schrodinger wave equation, Stationary states, Eigen functions, Eigen values and their significance.

(15 Lectures)

UNIT-III

APPLICATION OF SCHRODINGER WAVE EQUATION TO ID PROBLEMS

(i) Particle in one-dimensional box (solution of Schrodinger wave equation, Eigen functions, Eigen values, quantization of energy, nodes and anti-nodes, zero point energy).

(ii) One dimensional step potential: E > Vo (reflection and transmission coefficients).

(iii) One dimensional step potential: E < Vo (calculation of penetration depth).

(iv) One dimensional potential barrier: E > Vo (reflection and transmission Coefficients).

(v) One-dimensional potential barrier, E < Vo (calculation of reflection and penetration or tunnelling coefficients).

(vi) Solution of Schrodinger equation for harmonic oscillator: energy eigen functions and eigen values, Zero-point energy.

(15 ectures)

UNIT-IV

APPLICATION OF SCHRODINGER WAVE EQUATION TO 3D PROBLEMS

Separation of Schrodinger wave equation in Cartesian coordinates; Free particle: energy eigenfunctions and eigenvalues; Particle in a cubic potential box: normalized energy eigenfunctions and eigenvalues, non-degenerate and degenerate eigenstates; Three-dimensional anisotropic and isotropic harmonic oscillator: normalized energy eigenfunctions and eigenvalues, degeneracy; Central potentials: Separation of Schrödinger equation in spherical polar coordinates, radial and angular equations.

(15 Lectures)

CO No. **Course code (EP-402) : Quantum Mechanics**

After successfully completing the course, student will be able to:

CO-1 Know main aspects of the inadequacies of classical mechanics and understand historical development of quantum mechanics and understand the theory of quantum measurements, wave packets and uncertainty principle.

CO-2 Understand the central concepts of quantum mechanics: wave functions, Interpretation of Wave Function, momentum and energy operator, expectation values, the Schrodinger equation, time dependent and time independent cases, probability density, the normalization techniques, Eigen functions, Eigen values and their significance.

CO-3 Understanding the behavior of quantum particle encountering a i) barrier & ii) potential.

CO-4 Solve Schrodinger equation for ground state energy and wave functions of various simple quantum mechanical one dimensional and three dimensional potentials.

REFERENCES

1. Quantum Mechanics, Leonard I. Schiff , 3rd Edn 2010, Tata McGraw Hill.
2. A Text book of Quantum Mechanics, P.M. Mathews and K. Venkatesan, 2nd Edn, 2010, McGraw Hill.
3. Quantum Mechanics, Robert Eisberg and Robert Resnick, 2nd Edn, 2002, Wiley.
4. Quantum Mechanics, G. Aruldhas, 2nd Edn 2002, PHI Learning of India.
5. Quantum Mechanics, B.H. Bransden and C.J. Joachain, Pearson Education, New Delhi.
6. Introductory Quantum Mechanics, David J. Griffith, 2nd Ed. 2005, Pearson Education.
7. Quantum Physics of Atoms Molecules, Solids, Nuclei and Particles, R.M. Eisberg and R. Resnick, Wiley Eastern Ltd, New Delhi

M. Sc. Engineering Physics
Semester-IV
Subject: Physics
(Course Type- Core Course, Course Code: EP-403)
Nomenclature: Physics Practical-IV
Credits: 2

Max. Marks: 50
Time: 3 hrs.

Special Note: -

1. Do any eight experiments from the given list of experiments.
2. The students are required to calculate the error involved in a particular experiment.
3. The Practical examination will be held in a single session of 3 hours.

Distribution of Marks:

Experiment	25 marks
Viva- voce	15 marks
Lab Record	10 marks
Total	50 marks

LIST OF EXPERIMENTS

1. To measure the (a) area of a window (b) height of an inaccessible object using a sextant.
2. To determine Refractive index of the material of a prism using sodium source.
3. To determine the dispersive power and Cauchy constants of the material of a prism using Mercury discharge source.
4. To draw a graph between wave length and minimum deviation for various lines from a Mercury discharge source.
5. Determination of wave length of sodium light and the number of lines per centimetre using a diffraction grating.
6. Determination of wave length of sodium light using Newton's Rings.
7. Resolving power of a telescope.
8. Comparison of Illuminating Powers by a Photometer.
9. Measurement of (a) Specific rotation (b) concentration of sugar solution using polarimeter.
10. Ordinary and extra ordinary refractive indices for calcite or quartz.
11. To find the equivalent focal length of a lens system by nodal slide assembly.

CO No. **Course code (EP-403) : Physics Practical-IV**

After successfully completing the course, student will be able to:

CO-1 Hands-on experience of using various optical instruments and making finer measurements of wavelength of light using Newton Rings experiment, Fresnel Biprism etc. and resolving power of optical equipment.

CO-2 Understand various optical phenomena, principles, workings and applications optical instruments through Experiments.

CO-3 Learn to present observations, results and analysis in suitable and presentable form.

REFERENCES

1. B.Sc. Practical Physics, C.L. Arora, S. Chand Publisher, New Delhi
2. Advanced Level Practical Physics, M. Nelkon and Ogborn, Henemann Education Books Ltd., New Delhi
3. Practical Physics, S.S. Srivastava and M.K. Gupta, Atma Ram & Sons, Delhi
4. Practical Physics, S.L. Gupta and V. Kumar, Pragati Prakashan Meerut
5. Modern Approach to Practical Physics, R.K. Singla, Modern Publishers, Jalandhar
6. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, Asia Publishing House

M. Sc. Engineering Physics
Semester – IV
Subject: Mathematics
(Course Type-Core, Course Code: MT-401)
Nomenclature: Abstract Algebra
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. The examiner will set 8 questions asking two questions from each unit by taking course outcomes (COs) into consideration.
2. The examinee will be required to attempt 5 questions, selecting at least one question from each unit.

UNIT-I

Definition and examples of a group including Permutation group, quaternion group, Abelian and Non-abelian groups. The Group Zn of integers under addition modulo n and under multiplication modulo n . Elementary properties of groups. Order of a group. Order of an element of a group . Subgroup and Subgroup tests. Centralizer, Normalizer, Center of a group. Cyclic group and properties of cyclic groups. Cycle notation for permutations. Properties of permutations. Even and odd permutations. Alternating groups.

UNIT –II

Cosets. Index of a subgroup , Lagrange's theorem , Normal subgroup , Quotient groups . Group homomorphism, Group isomorphisms. Cayley's theorem. Properties of isomorphisms. First, Second and Third isomorphism theorems for groups.

UNIT-III

Definition and examples of rings. Commutative and non-commutative rings. Rings from number system ,Z_n ring of integers modulo n , Ring of matrices. Properties of rings. Subrings. Characteristic of a ring. Integral Domain and Field. Examples of fields: Z_n, Q, R and C.

Ideals. Ideal generated by a subset of a ring. Prime and maximal ideals.

UNIT-IV

Quotient ring. Ring homomorphisms. Properties of ring homomorphisms. First, Second and Third Isomorphism theorems for rings. Euclidean ring.

Course Outcomes: The course will enable the students to:

1. Recognize the mathematical objects called groups, their elementary properties, order of a group, subgroup, cyclic groups and their properties.
2. Understand the notions of cosets, normal subgroups, and quotient groups. Know homomorphisms, isomorphisms and their properties and to prove three isomorphism theorems.
3. Learn about ring, subring, integral domain, field and ideal and related results.
4. Understand quotient rings, Euclidean ring, ring homomorphisms, ring isomorphisms and fundamental isomorphism theorems.

Recommended Text Books:

1. Joseph A. Gallian (2013). *Contemporary Abstract Algebra* (8th ed.). Cengage Learning India Private Limited, Delhi.
2. John B. Fraleigh (2002). *A First Course in Abstract Algebra* (7th ed.). Pearson**.**
3. M. Artin (2011). *Abstract Algebra* (2nd ed.). Pearson.
4. Rotman, Joseph J. (1995). *An Introduction to The Theory of Groups* (4th ed.). Springer Verlag, New York.
5. Beachy, John A., & Blair, William D. (2006). *Abstract Algebra* (3rd ed.). Waveland Press.

M. Sc. Engineering Physics
Semester – IV
Subject: Mathematics
(Course Type-Core, Course Code: MT-402)
Nomenclature: Numerical Analysis
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. The examiner will set 8 questions asking two questions from each unit by taking course outcomes (COs) into consideration.
2. The examinee will be required to attempt 5 questions, selecting at least one question from each unit.
3. Use of a non-programmable scientific calculator is allowed in the examination.

Unit-I:

Round-off error and computer arithmetic, Local and global truncation errors, Algorithms and convergence. Numerical methods for solving algebraic and transcendental Equations: Bisection method, false position method, fixed point iteration method, Newton-Raphson method and secant method. Newton's iterative method for finding pth root of a number.

Unit-II:

Numerical methods for solving simultaneous linear equations: Gauss-elimination method, Gauss-Jordan method, Triangularization method (LU decomposition method). Crout's method, Cholesky Decomposition method. Iterative method; Jacobi's method, Gauss-Seidal method, relaxation method.

Unit-III:

Finite Differences operators and their relations. Interpolation with equal intervals: Gregory–Newton forward and backward difference interpolations. Interpolation with unequal intervals: Newton's divided difference formulae, Lagrange's Interpolation formulae.

Central Differences: Gauss forward and Gauss's backward interpolation formulae. Sterling formula, Bessel's formula.

Piecewise linear interpolation, Cubic spline interpolation.

Numerical Differentiation: First and second derivative of a function using interpolation formulae.

Unit-IV:

Numerical Integration: Newton-Cote's Quadrature formula, Trapezoidal rule, Simpson's one-third and three-eighth rule, Chebychev formula, Gauss Quadrature formula.

Numerical solution of ordinary differential equations: Single step methods- Picard's method. Taylor's series method, Euler's method, Runge-Kutta Methods. Multiple step methods; Predictor-corrector method, Modified Euler's method, Milne-Simpson's method.

Course Outcomes: This course will enable the students to:

1. Understand errors and their types. Learn techniques to obtain numerical solutions of algebraic and transcendental equations.
2. Attain numerical skills to find solutions of system of linear equations by different methods.
3. Learn different interpolation and extrapolation methods and their applications. Apply numerical methods to obtain derivatives.
4. Understand numerical methods for evaluating integrals and solving differential equations and to develop skill of applying these methods for future use in scientific problems.

Recommended Text Books:

1. Brian Bradie (2006), *A Friendly Introduction to Numerical Analysis.* Pearson.
2. C. F. Gerald & P. O. Wheatley (2008). *Applied Numerical Analysis* (7th edition), Pearson Education, India.
3. M.K. Jain, S. R. K. Iyengar & R. K. Jain (2012). *Numerical Methods for Scientific and Engineering Computation* (6th edition). New Age International Publishers.
4. Robert J. Schilling & Sandra L. Harris (1999). *Applied Numerical Methods for Engineers Using* MATLAB *and C*. Thomson-Brooks/Cole.
5. S.D. Conte and Carl de Boor (2017). *Elementary Numerical Analysis: An algorithmic Approach*. SIAM.
6. A. Gupta and S.C. Bose (1989). *Introduction to Numerical Analysis*. Academic Publishers.
7. F.B. Hildebrand (1987). *Introduction to Numerical Analysis*. Dover Publications.

M. Sc. Engineering Physics
Semester – IV
Subject: Mathematics
(Course Type-Core, Course Code: MT-403)
Nomenclature: Mathematics practical-IV
No. of Credits: 2

Max. Marks: 50
Time: 3 hrs.

Special Note: -

1. The examiner will set 4 questions at the time of practical examination by taking course outcomes (COs) into consideration.
2. The examinee will be required to write two programs and execute one program successfully.
3. The evaluation will be done on the basis of practical record, viva-voce, write up and execution of the program.
4. The Practical examination will be held in a single session of 3 hours.

Distribution of Marks:

Experiment	25 marks
Viva- voce	15 marks
Lab Record	10 marks
Total	50 marks

1. To find roots of algebraic and transcendental equations using Bisection method.
2. To find roots of algebraic and transcendental equations using Newton Raphson method.
3. To find roots of algebraic and transcendental equations using Regula Falsi method.
4. To find solution of system of equations using Gauss Elimination method.
5. To find solution of system of equations using Gauss Seidal method.
6. To find inverse of a square matrix using Gauss Jordan method
7. To find approximate value of a function by Newton Forward Interpolation formula.
8. To find approximate value of a function by Newton Backword Interpolation formula.
9. To find approximate value of a function using Lagrange's Interpolation formula.
10. To fit a curve by Least Squares Approximation method.
11. To find first and second order derivatives using interpolation formulas.
12. To evaluate a definite integral using Trapezoidal Rule.
13. To evaluate a definite integral using Simpson 1/3 rule.
14. To evaluate a definite integral using Simpson 3/8 rule.
15. To solve an ordinary differential equation using Euler's method.
16. To find solution of an ordinary differential equation using Euler's modified method.
17. To solve an ordinary differential equation using Runge-Kutta second order and fourth order methods.

Course Outcomes: This course will enable the students to:

1. Attain skill of computer programming and to use that a tool for problem solving.
2. Solve scientific problems by applying numerical techniques in C programing language.
3. Write and execute programs of numerical methods in C.
4. Apply knowledge of numerical analysis in investigation of problems and solving them at individual level and as member of a group.

M. Sc. Engineering Physics
Semester – IV
Subject: Chemistry
(Course Type-Core, Course Code: CH-401)
Nomenclature: Inorganic Chemistry-IV
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

Section – A (15 hrs.)

Metal- Ligand Bonding in Transition Metal complexes

Limitations of valence bond theory, an elementary idea of crystal field theory, crystal field splitting in octahedral, tetrahedral and square planar complexes, factors affecting the crystal field parameters.

Thermodynamics and Kinetic Aspects of metal complexes

A brief outline of thermodynamic stability of metal complexes and factors affecting the stability, Irving William Series, substitution reactions of square planer complexes of Pt[II], Trans effect.

Magnetic properties of Transition metal complexes

Types of magnetic materials, magnetic susceptibility, method of determining magnetic susceptibility, spin only formula, L-S coupling, correlation of μ_s and μ_{eff} values, orbital contribution to magnetic moments, application of magnetic moment data for 3d metal complexes.

Section –B(15 hrs.)

Electronic spectra of Transition metal complexes

Selection rules for d-d transition, spectroscopic ground states, spectrochemical series, orgel energy level diagram for d1 and d9 states, discussion of electronic spectrum of $[Ti(H2O)6]^{+3}$ complex ion.

Theory of Qualitative and Quantitative Analysis

Chemistry of analysis of various groups of basic and acidic radicals, chemistry of identification of acid radicals in typical combination, chemistry of interference of acid radicals including their removal in the analysis of basic radicals, common ion effect, solubility product, theory of precipitation, co-precipitation, post precipitation, purification of precipitates.

Course Outcomes:

CO1: To recapitulate the concept of valence bond theory and know the concept of crystal field theory with reference to splitting of d orbital's in octahedral, tetrahedral and square planar complexes and factors affecting the crystal field parameters

CO2: To explain the factors responsible for the stability of coordination complexes and various substitution reactions of square planar complexes with reference to trans effect

CO3: To study the magnetic properties of transition metal complexes and various types of magnetic materials and their magnetic susceptibility

CO4: To explain the methods for the determination of magnetic susceptibility

CO5: To apply the magnetic moment data for 3d metal complexes and study the selection rules for the d-d transitions

CO5: Able to calculate the spectroscopic terms for various metal ions

CO6: Have knowledge about orgal level diagrams for d1 and d9 electronic states and the electronic spectrum of $[Ti(H2O)6]^{+3}$complex ion.

Reference Books:

- Lee, J.D. *Concise Inorganic Chemistry* ELBS, 1991.
- Cotton, F.A., Wilkinson, G. &Gaus, P.L. *Basic Inorganic Chemistry*, 3rd ed., Wiley.
- Douglas, B.E., McDaniel, D.H. & Alexander, J.J. *Concepts and Models in Inorganic Chemistry*, John Wiley & Sons.
- Huheey, J.E., Keiter, E.A., Keiter, R.L. & Medhi, O.K. *Inorganic Chemistry:Principles of Structure and Reactivity*, Pearson Education India, 2006.
- Pradeep's inorganic chemistry, Volume III
- R Chand, inorganic chemistry, Volume III
- Modern publications,inorganic chemistry, Volume III
- Coordination chemistry by Ajai kumar, Aaryush publications, Delhi

M. Sc. Engineering Physics
Semester – IV
Subject: Chemistry
(Course Type-Core, Course Code: CH-402)
Nomenclature: Physical Chemistry-IV
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

Section-A (15 Hours)

Quantum Mechanics-I

Black-body radiation, Planck's radiation law, photoelectric effect, postulates of quantum mechanics, quantum mechanical operators, Role of operators in quantum mechanics, commutation relations, Hamiltonian operator, Hermitian operator, average value of square of Hermitian as a positive quantity. Schrödinger equation (basic idea), Determination of wave function & energy of a particle in one dimensional box.

Physical Properties and Molecular Structure

Optical activity, polarization – (Clausius – Mossotti equation derivation excluded). Orientation of dipoles in an electric field, dipole moment, induced dipole moment, measurement of dipole moment -temperature method and refractivity method, dipole moment and structure of molecules, Magnetic permeability, magnetic susceptibility and its determination. Application of magnetic susceptibility, magnetic properties – paramagnetism, diamagnetism and ferromagnetism.

Section-B (15 Hours)

Spectroscopy

Introduction: Electromagnetic radiation, regions of spectrum, basic features of spectroscopy, statement of Born-Oppenheimer Approximation, Degrees of freedom.

Rotational Spectrum

Selection rules, Energy levels of rigid rotator (semi-classical principles), rotational spectra of diatomic molecules, spectral intensity distribution using population distribution (Maxwell-Boltzmann distribution), determination of bond length and isotopic effect.

Vibrational spectrum

Selection rules, Energy levels of simple harmonic oscillator, pure vibrational spectrum of diatomic molecules, determination of force constant and qualitative relation of force constant and bond energy, idea of vibrational frequencies of different functional groups.

Raman Spectrum

Concept of polarizability, pure rotational and pure vibrational Raman spectra of diatomic molecules, selection rules, Quantum theory of Raman spectra. Give more stress on numerical problems of all spectroscopy.

Course Outcomes:

CO1: To know about dual characteristic of matter and extend this fact to obtain postulates of quantum mechanics and quantum-mechanical operators, apply Schrödinger equation to determine the physical observables for particle in a box

CO2: To be able to explain about the physical and magnetic properties associated with various molecular substances

CO3: To have sound knowledge about the consequences of interaction of radiation with matter resulting into various types of spectra

CO4: To be able to solve various numerical problems related to spectroscopy

Reference Books:

- Barrow, G.M. *Physical Chemistry* Tata McGraw-Hill (2007).
- Castellan, G.W. *Physical Chemistry* 4th Ed. Narosa (2004).
- B. R. Puri, Madan S. Pathania , L. R. Sharma*Principles of Physical Chemistry* Vishal Publications
- Chandra, A. K. *Introductory Quantum Chemistry* Tata McGraw-Hill (2001).
- House, J. E. *Fundamentals of Quantum Chemistry* 2nd Ed. Elsevier: USA(2004).
- Lowe, J. P. & Peterson, K. *Quantum Chemistry*, Academic Press (2005).
- Banwell, C. N. & McCash, E. M. *Fundamentals of Molecular Spectroscopy* 4th Ed. Tata McGraw-Hill: New Delhi (2006)
- Pradeep's physical chemistry, Volume III.
- R Chand, physical chemistry, Volume III.
- Modern publications, physical chemistry, Volume III.

M. Sc. Engineering Physics
Semester – IV
Subject: Chemistry
(Course Type-Core, Course Code: CH-403)
Nomenclature: Organic Chemistry-IV
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

Section A (15 hrs.)

NMR Spectroscopy

Principle of nuclear magnetic resonance, the PMR spectrum,number of signals, peak areas, , magnetic equivalent and nonequivalent protons, positions of signals and chemical shift, shielding and deshielding of protons, proton counting, splitting of signals and coupling constant. Discussion of PMR spectra of the molecules: ethyl bromide, n-propyl bromide, isopropyl bromide, 1,1-dibromoethane, ethanol, acetaldehyde, ethyl acetate, toluene, benzaldehyde and acetophenone.

Organometallic Compounds

Grignard reagents: formation, structure and chemical reactions. Organozinc compounds: formation and chemical reactions. Organolithium compounds: formation and chemical reactions. Reactions of Grignard and organolithium reagents with epoxides.

Section–B (15hrs.)

Carbohydrates

Classification and nomenclature of Monosaccharides, mechanism of osazone formation, interconversion of glucose, fructose and mannose, chain lengthening and chain shortening of aldoses. Configuration of monosaccharides. Determination of ring size of glucose and fructose. Open chain and cyclic structure of D(+)-glucose & D(-) fructose. Mechanism of mutarotation. An introduction to disaccharides (maltose, sucrose and lactose; reducing and

non-reducing) and polysaccharides (starch and cellulose) without involving structure determination.

Amino Acids and Peptides sequencing

Classification α-of amino acids. Acid-base behavior, isoelectric point, Preparation (Gabriel phlamide, Erlenmeyer azlactone, Strecker method) and properties of α-amino acids(ester of –COOH group, acetylation of $–NH_2$ group, complexation with Cu^{2+} ions, ninhydrin test, Hydantoin formation), Structure and nomenclature of peptides, Peptide structure determination, end group analysis (DNFB, Edman thiohydantoin and carboxypeptidase method), selective hydrolysis of peptides.

Introduction to Heterocyclic Compounds

Molecular orbital picture and aromatic characteristics of pyrrole, furan, thiophene and pyridine. Comparison of basicity of pyridine, piperidine and pyrrole.

Course Outcomes:

CO1: Get knowledge about the principle of nuclear magnetic resonance and the PMR spectra of the various molecules

CO2: Brief description of organometallic compounds

CO3: To have knowledge about classification, structures and important reactions of carbohydrates and amino acids

CO4: Get knowledge aromatic behaviour and basicity of simple heterocyclic compounds

Reference Books:

- Morrison, R. T. & Boyd, R. N. *Organic Chemistry*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
- C.N. Banwell: Fundamentals of Molecular Spectroscopy.
- Finar, I. L. *Organic Chemistry* (*Volume 2)*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
- Berg, J.M., Tymoczko, J.L. &Stryer, L. *Biochemistry*, W.H. Freeman, 2002.
- Nelson, D. L. & Cox, M. M. *Lehninger's Principles of Bioch*emistry *7th Ed.*, W. H. Freeman.
- Berg, J.M., Tymoczko, J.L. &Stryer, L. *Biochemistry*, W.H. Freeman, 2002.
- Pradeep's organic chemistry, Volume III.
- R Chand, organic chemistry, Volume III.
- Modern publications, organic chemistry, Volume III.
- New Age International (P) Ltd, Publishers Volume, I and III

M. Sc. Engineering Physics
Semester – IV
Subject: Chemistry
(Course Type-Core, Course Code: CH-404)
Nomenclature: Chemistry practical-IV
Credits: 2

Max. Marks: 50
Time: 6 hrs.

Special Note: -

The Practical examination will be held in two sessions of 3 hours each & the students are required to perform two experiments during the examination.

Distribution of Marks:

Experiment	15+15 marks
Viva- voce	5+5 marks
Lab Record	10 marks
Total	50 marks

1. Systematic identification (detection of extra elements, functional groups, determination of melting point or boiling point and preparation of at least one pure solid derivative) of the following simple mono and bifunctional organic compounds: Naphthalene, anthracene, acenaphthene, benzyl chloride, *p*-dichlorobenzene, *m*-dinitrobenzene, *p*-nitrotoluene, resorcinol, hydroquinone, -naphthol, -naphthol, benzophenone, ethyl methyl ketone, benzaldehyde, vanillin, oxalic acid, succinic acid, benzoic acid, salicylic acid, aspirin, phthalic acid, cinnamic acid, benzamide, urea, acetanilide, benzanilide, aniline hydrochloride, p-toluidine, phenyl salicylate (salol), glucose, fructose, sucrose, *o*-, *m*-, *p*-nitroanilines, thiourea.

2. Gravimetric Analysis:
   Quantitative estimations of, Cu^{2+} as copper thiocyanate, Ni^{2+} as Ni^{-} dimethylglyoxime and Al^{3+} as oxinate.

Course Outcomes:

CO1: To identify extra elements present in various solid organic compounds

CO2: Able to identify functional group present in organic compounds

CO2: Able to measure melting point, solubility behaviour, pH range, flame testing etc. of organic compounds

CO4: To perform gravimetric analysis and also able to analyze quantitatively copper, nickel and aluminum in the given solution

KURUKSHETRA UNIVERSITY KURUKSHETRA

Five Years Integrated
M. Sc. Engineering Physics (3 Years BSc+2Years M.Sc.)
Under CBCS-LOCF
(Effective from the Academic Session 2022-23)

Department of Physics
INSTITUTE OF INTEGRATED & HONORS STUDIES
Kurukshetra University
Kurukshetra - 136 119
Haryana (INDIA)

Scheme and Syllabi of five years integrated
M. Sc. ENGINEERING PHYSICS Programme
(From 1st to 6th semester)
Under CBCS-LOCF
(w. e. f. from the Academic Session 2022-23)
(After 3 Years / 6 Semesters, students may be awarded B. Sc.-Engineering Physics Degree)

3rd Year (5th and 6th semesters)

5th Semester

Course Type & No.	Course Code	Course Nomenclature	Credits (L+T+P)	Teaching Hours per week	Maximum Marks			Duration of Examination (Hrs.)
					Internal Assessment*	End-semester Examination	Total	
Skill Enhancement Course-III (Mathematics)	SEC-501	(A) Vector Calculus (B) Special Functions	2+0+0	2	10	40	50	3
Discipline Specific Elective-I (Physics)	EP-501	(A) Nuclear Physics (B) Mathematical Physics	3+0+0	3	15	60	75	3
Discipline Specific Elective-II (Physics)	EP-502	(A) Solid State Physics (B) Medical Physics	3+0+0	3	15	60	75	3
Discipline Specific Elective III (Physics)	EP-503	(A) (B) Physics Practical-V	0+0+2	4	----------	50	50	3
Discipline Specific Elective-I (Mathematics)	MT-501	(A) Linear Algebra (B) Partial Differential Equations and Integral Transforms	3+0+0	3	15	60	75	3
Discipline Specific Elective-II (Mathematics)	MT-502	(A) Analytical Geometry (B) Mechanics – II	3+0+0	3	15	60	75	3
Discipline Specific Elective III (Mathematics)	MT-503	Mathematics Practical-V	0+0+2	4	----------	50	50	3
Discipline Specific Elective-I (Chemistry)	CH-501	(A) Heterocyclic and photochemistry (B) Bio-organic Chemistry	2+0+0	2	10	40	50	3
Discipline Specific Elective II (Chemistry)	CH-502	(A) Organometallic chemistry, Inorganic polymers and Quantum mechanics (B) Applied chemistry	2+0+0	2	10	40	50	3
Discipline Specific Elective-III (Chemistry)	CH-503	Chemistry practical-V	0+0+2	4	----------	50	50	6
Total Credits/Marks in semester-V			**24**				**600**	

*Internal Assessment marks

20% marks in each theory paper shall be reserved for Internal Assessment. The following parameters (with weightage of each) forming the basis of award of Internal Assessment:-

(i) One test/Seminar for each paper (one period duration)	: 50%
(ii) One Assignment for each paper	: 25%
(iii) Attendance	: 25%

6th Semester

Course Type & No.	Course Code	Course Nomenclature	Credits (L+T+P)	Teaching Hours per week	Maximum Marks			
					Internal Assessment*	End-semester Examination	Total	
Skill Enhancement Course-IV (Chemistry)	SEC-601	(A) Clinical chemistry (B) Chemistry lab-maintenance and handling	2+0+0	2	10	40	50	3
Discipline Specific Elective-IV (Physics)	EP-601	(A) Atomic & Molecular Spectroscopy (B) Elements of Modern Physics	3+0+0	3	15	60	75	3
Discipline Specific Elective-V (Physics)	EP-602	(A) Digital and Analog circuits & Instrumentation (B) Embedded System: Introduction to Microcontroller	3+0+0	3	15	60	75	3
Discipline Specific Elective VI (Physics)	EP-603	(A) (B) Physics Practical-VI	0+0+2	4	----------	50	50	3
Discipline Specific Elective-IV (Mathematics)	MT-601	(A) Real Analysis–II (B) Complex Analysis	3+0+0	3	15	60	75	3
Discipline Specific Elective-V (Mathematics)	MT-602	(A) Linear Programming (B) Probability and Statistics	3+0+0	3	15	60	75	3
Discipline Specific Elective VI (Mathematics)	MT-603	Mathematics Practical-VI	0+0+2	4	----------	50	50	3
Discipline Specific Elective-IV (Chemistry)	CH-601	(A)Applied physical Chemistry (B)Green Chemistry, organosulphur compounds and organic polymers	2+0+0	2	10	40	50	3
Discipline Specific Elective V (Chemistry)	CH-602	(A) Analytical chemistry (B)Nuclear chemistry, organosulphur compounds and catalysis	2+0+0	2	10	40	50	3
Discipline Specific Elective-VI (Chemistry)	CH-603	A B Chemistry practical-VI	0+0+2	4	----------	50	50	6
Total Credits/Marks in semester-VI			**24**				**600**	

M. Sc. Engineering Physics
Semester – V
Subject: Mathematics
(Course Type- Skill Enhancement, Course Code: SEC-501(A))
Nomenclature: Vector Calculus
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. The examiner will set 8 questions asking two questions from each unit by taking course outcomes (COs) into consideration.
2. The examinee will be required to attempt 5 questions, selecting at least one question from each unit.

Unit-I:

Scalar and vector product of vectors. Vector differentiation; Scalar Valued point functions, vector valued point functions, derivative along a curve, directional derivatives.

Unit-II:

Gradient of a scalar point function, geometrical interpretation of grad Φ. Divergence and curl of vector point function, their characteristics and examples.

Unit-III:

Gradient, divergence and curl of sum and product of functions and their related vector identities. Laplacian operator.

Vector integration; Line integral.

Unit-IV:

Surface integral, Volume integral.

Theorems of Gauss, Green & Stokes and problems based on these theorms.

Course Outcomes: This course will enable the students to:

1. Understand and solve problems related to scalar and vector product of vectors. Learn vector differentiation and directional derivatives and their problem solving.
2. Learn gradient, divergence and curl operators. Apply knowledge and these tools in problem solving.
3. Understand vector identities, Laplacian operator. Learn vector integration and line integral. Solve problems using these concepts.
4. Learn surface and volume integral formulations and their evaluation. Prove Gauss Divergence, Green's and Stoke's theorems. Realize importance of Green, Gauss and Stokes' theorems.

Recommended Text Books:

1. Murray Spiegel and Seymour Lipschutz (2017) *Vector Analysis*, Schaum Outline Series.
2. N. Saran and S.N. Nigam (2001). *Introduction to Vector Analysis*. Pothishala Pvt. Ltd., Allahabad.
3. Shanti Narayan and P.K. Mittal (2003). A Text Book of Vector Calculus. S. Chand.
4. Howard Anton, I. Bivens & Stephan Davis (2016). *Calculus* (10th edition). Wiley India.
5. Gabriel Klambauer (1986). *Aspects of Calculus*. Springer-Verlag.
6. George B. Thomas Jr., Joel Hass, Christopher Heil & Maurice D. Weir (2018). *Thomas*' *Calculus* (14th edition). Pearson Education.
7. James Stewart (2012). *Multivariable Calculus* (7th edition). Brooks/Cole. Cengage.
8. Monty J. Strauss, Gerald L. Bradley & Karl J. Smith (2011). *Calculus* (3rd edition). Pearson Education. Dorling Kindersley (India) Pvt. Ltd.

M. Sc. Engineering Physics
Semester – V
Subject: Mathematics
(Course Type- Skill Enhancement, Course Code: SEC-501(B))
Nomenclature: Special Functions
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. The examiner will set 8 questions asking two questions from each unit by taking course outcomes (COs) into consideration.
2. The examinee will be required to attempt 5 questions, selecting at least one question from each unit.

Unit-I

Series solution of differential equations – Power series method. Hypergeometric Series. Hypergeometric function, its integral representation. Hypergeometric differential equation and solutions. Contiguous function relations, simple transformations.

Unit-II

Bessel equation and its solution: Bessel functions and their properties-Convergence, Recurrence relations and generating functions. Bessel's Integral. Orthogonality of Bessel functions.

Unit-III

Legendre differentials equation and its solution; Legendre functions and their properties; Recurrence relations and generating functions. Orhogonality of Legendre polynomials. Rodrigues' Formula for Legendre Polynomials, Laplace Integral Representation of Legendre polynomial.

Unit-IV

Hermite differentials equations and its solutions; Hermite function and its properties; Recurrence relations and generating functions. Orhogonality of Hermite polynomials. Rodrigues' Formula for Hermite Polynomial,

Course Outcomes: This course will enable the students to:

1. Understand singular points of a differential equation and to solve such differential equation by power series method. Learn Hypergeometric differential equation, Hypergeometric function and its properties.
2. Know Bessel's differential equation and its solution. Understand recurrence relations, generating function and othogonality of Bessel's function. Understand Bessel integral. Attain skills to make use of Bessel functions in scientific problem solving.
3. Familiarise with Legendre's differential equation and its solution in the form of Legendre functions. Understand recurrence relations, generating function and othogonality of Legendres function, Rodrigues' formula. Apply knowledge in problem solving.
4. Know Hemite's differential equation and its solution in the form of Hemite functions. Understand recurrence relations, generating function and othogonality of Hemite function, Rodrigues' formula. Attain skill to apply these tools for investigation and solution of problems.

Recommended Text Books:

1. Erwin Kreyszig (2011). *Advanced Engineering Mathematics* (10th edition). Wiley.
2. Shepley L. Ross (2007). *Differential Equations* (3rd edition), Wiley India. James Stewart (2012). *Multivariable Calculus* (7th edition). Brooks/Cole. Cengage.
3. Earl. D. Ranvillie (1960). *Special Functions*. Macmillan.
4. W.W. Bell (2004). Special Functions for Scientists & Engineers. Dover Books on Mathematics.
5. L.C. Andrews (1992). Special Functions of Mathematics for Engineers, SPIE Press.

M. Sc. Engineering Physics
Semester-V
Subject: Physics
(Course Type- Discipline Specific Elective, Course Code: EP-501(A))
Nomenclature: Nuclear Physics
No. of credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4. 20% numerical problems are to be set.
5. Use of scientific (non-programmable) calculator is allowed.

UNIT-I

NUCLEAR STRUCTURE AND PROPERTIES OF NUCLEI

Nuclear composition (p-e and p-n hypotheses), Nuclear properties; Nuclear size, spin, parity, statistics, magnetic dipole moment, quadruple moment (shape concept). Determination of mass by Bain-Bridge, Bain-Bridge and Jordan mass spectrograph. Determination of charge by Mosley Law. Determination of size of nuclei by Rutherford Back Scattering.

(15 Lectures)

UNIT-II

NUCLEAR RADIATIONS DECAY PROCESS AND INTERACTION

Alpha-disintegration and its theory, Energetic of alpha-decay, Origin of continuous beta spectrum (neutrino hypothesis), types of beta-decay and energetic of beta-decay, Nature of gamma rays, Energetic of gamma rays, Interaction of heavy charged particles (Alpha particles); Energy loss of heavy charged particle (idea of Bethe formula; no derivation), Range and straggling of alpha particles. Geiger-Nuttal law, Interaction of light charged particle (Beta-particle), Energy loss of beta-particles (ionization), Range of electrons, absorption of beta-particles. Interaction of Gamma Ray; Passage of Gamma radiations through matter (Photoelectric, Compton and pair production effect), electron-positron annihilation, Absorption of Gamma rays (Mass attenuation coefficient) and its application.

(15 Lectures)

UNIT-III

NUCLEAR ACCELERATORS AND NUCLEAR RADIATION DETECTORS

Linear accelerator, Tendem accelerator, Cyclotron and Betatron accelerators, Gas filled counters; Ionization chamber, proportional counter, G.M. Counter (detailed study), Scintillation counter and semiconductor detector.

(15 Lectures)

UNIT-IV

NUCLEAR REACTIONS AND NUCLEAR REACTORS

Nuclear reactions, Elastic scattering, Inelastic scattering, nuclear disintegration, Photonuclear reaction, Radiative capture, Direct reaction, Heavy ion reactions and spallation Reactions, Conservation laws, Q-value and reaction threshold, Nuclear Reactors, General aspects of Reactor design, Nuclear fission and fusion reactors, (Principle, construction, working and uses in brief).

(15 Lectures)

CO No. **Course code (EP-501(A)): Nuclear Physics**

After successfully completing the course, student will be able to:

CO-1 Learn about nuclear composition & nuclear properties like nuclear size, spin, parity, statistics, magnetic dipole moment, quadruple moment and also be able to understand the basics of experimental techniques/methods to determine the mass and size of nuclei.

CO-2 Learn about the emission of alpha, beta and gamma rays, the mechanisms of the emissions of these rays, outlines of theory of alpha decay and Pauli's theory of beta decay with the neutrino hypothesis. Also Learn some basic aspects of interaction Interaction of heavy charged particles (Alpha particles) and interaction of gamma ray by photoelectric effect, Compton scattering and pair production, energy loss due to ionization.

CO-3 Understand the principles and basic constructions of particle accelerators and the detectors of nuclear radiations.

CO-4 Learn the basic aspects of nuclear reactions, the Q-value of such reaction & its derivation from conservation laws and understand the Principle, construction, working and uses of Nuclear fission and fusion reactors.

REFERENCES

1. Nuclear Physics, 2nd Ed (1962), I. Kaplan, Oxford and IBH, New Delhi
2. Nuclear Measurement Techniques, K. Sriram, AEWP, New Delhi
3. Introduction to Experimental Nuclear Physics, R.M. Singru, John Wiley & Sons
4. Nuclear Physics , D.C. Tayal, Himalayan Publishing House, Bombay
5. Atomic and Nuclear Physics Vol II (1994), S.N. Ghoshal, S Chand & Co New Delhi

6. Basic Nuclear Physics, B.N. Srivastava, (1993), Pragati Prakashan Meerut
7. Introductory Nuclear Physics, Halliday, Asia Publishing House, New Delhi
8. Fundamentals of Radiochemistry, D. D. Sood, A. V. R. Ready and Ramamoorthy, IANCAS (2007), BARC, Bombay.
9. Concepts of Nuclear Physics (1998), B. L. Cohen, Tata Mc Graw Hill, New Delhi
10. Introductory Nuclear Physics (1988), K. S. Krane, John Wiley & Sons New Delhi
11. Nuclear Physics (1992), S.B. Patel, Wiley Eastern Ltd, New Delhi
12. Nuclear Physics (1993), R.R. Roy and B.P. Nigam, Wiley Eastern Ltd. New Delhi.

M. Sc. Engineering Physics
Semester-V
Subject: Physics
(Course Type- Discipline Specific Elective, Course Code: EP-501(B))
Nomenclature: Mathematical Physics
No. of credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4. 20% numerical problems are to be set.
5. Use of scientific (non-programmable) calculator is allowed.

UNIT-I

FOURIER SERIES

Periodic functions, Orthogonality of sine and cosine functions, Dirichlet Conditions (Statement only), Expansion of periodic functions in a series of sine and cosine functions and determination of Fourier coefficients, Complex representation of Fourier series, Expansion of functions with arbitrary period, Expansion of non-periodic functions over an interval, Even and odd functions and their Fourier expansions, Application, Summing of Infinite Series.

SOME SPECIAL INTEGRALS

Beta and Gamma Functions, Relation between them. Expression of Integrals in terms of Gamma Functions, Error Function (Probability Integral).

(15 Lectures)

UNIT-II

CALCULUS OF FUNCTIONS OF MORE THAN ONE VARIABLE

Partial derivatives, exact and inexact differentials, Integrating factor, with simple illustration, Constrained Maximization using Lagrange Multipliers.

PARTIAL DIFFERENTIAL EQUATIONS

Solutions to partial differential equations, using separation of variables: Laplace's Equation in problems of rectangular, cylindrical and spherical symmetry.

(15 Lectures)

UNIT-III

FROBENIUS METHOD AND SPECIAL FUNCTIONS

Singular Points of Second Order Linear Differential Equations and their importance, Frobenius method and its applications to differential equations, Legendre, Bessel, Hermite and Laguerre Differential Equations, Properties of Legendre Polynomials: Rodrigues Formula, Orthogonality, Simple recurrence relations.

(15 Lectures)

UNIT-IV

COMPLEX ANALYSIS

Brief Revision of Complex Numbers and their Graphical Representation, Euler's formula, De Moivre's theorem, Roots of Complex Numbers, Functions of Complex Variables, Analyticity and Cauchy-Riemann Conditions, Examples of analytic functions, Singular functions: poles and branch points, order of singularity, branch cuts, Integration of a function of a complex variable, Cauchy's Inequality, Cauchy's Integral formula.

(15 Lectures)

CO No. **Course code (EP-501(B)): Mathematical Physics**

After successfully completing the course, student will be able to:

CO-1 Learn the Fourier analysis of periodic functions and their applications in physical problems. Learn the beta, gamma and the error functions and their applications in doing integrations.

CO-2 Acquire knowledge of methods to solve partial differential equations with the examples of important partial differential equations in Physics.

CO-3 Learn about the special functions, such as the Hermite polynomial, the Legendre polynomial, the Laguerre polynomial and Bessel functions and their differential equations and their applications in various physical problems.

CO-4 Learn about the complex numbers and their properties, functions of complex numbers and their properties such as analyticity, poles and residues.

REFERENCES

1. Mathematical Methods for Physicists: Arfken, Weber, 2005, Harris, Elsevier
2. Fourier Analysis by M.R. Spiegel, 2004, Tata McGraw-Hill.
3. Mathematics for Physicists, Susan M. Lea, 2004, Thomson Brooks/Cole.
4. An Introduction to Ordinary Differential Equations, Earl A Coddington, 1961, PHI Learning.
5. Differential Equations, George F. Simmons, 2006, Tata McGraw-Hill.
6. Essential Mathematical Methods, K.F. Riley and M.P. Hobson, 2011, Cambridge University Press
7. Partial Differential Equations for Scientists and Engineers, S.J. Farlow, 1993, Dover Publications.

8. Mathematical methods for Scientists and Engineers, D.A. McQuarrie, 2003, Viva Books.

M. Sc. Engineering Physics
Semester-V
Subject: Physics
(Course Type- Discipline Specific Elective, Course Code: EP-502(A))
Nomenclature: Solid State Physics
No. of credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4. 20% numerical problems are to be set.
5. Use of scientific (non-programmable) calculator is allowed.

UNIT-I

CRYSTAL STRUCTURE I

Crystalline and glassy forms, liquid crystals, crystal structure, periodicity, lattice and basis, crystal translational vectors and axes. Unit cell and Primitive Cell, Winger Seitz primitive Cell, symmetry operations for a two dimensional crystal, Bravais lattices in two and three dimensions. Crystal planes and Miller indices, Interplaner spacing, Crystal structures of Zinc Sulphide, Sodium Chloride and Diamond.

(15 Lectures)

UNIT-II

CRYSTAL STRUCTURE II

X-ray diffraction, Bragg's Law and experimental X-ray diffraction methods. K-space and reciprocal lattice and its physical significance, reciprocal lattice vectors, reciprocal lattice to a simple cubic lattice, b.c.c. and f.c.c. lattice.

(15 Lectures)

UNIT-III

ELECTRONIC PROPERTIES OF METALLIC SOLIDS

Free electron gas model, Energy levels and density of states in one and three dimensions, Fermi momentum, Fermi energy, Fermi temperature, Effect of temperature, heat capacity of electron gas (explicit calculation), Experimental heat capacity of metals, Concept of thermal effective mass, Electrical conductivity and Ohm's law, Experimental resistivity of metals, Matthiessen's rule, Motion in magnetic fields and Hall effect, Thermal conductivity of metals and Wiedmann-Franz law.

(15 Lectures)

UNIT-IV

SUPERCONDUCTIVITY

Historical introduction, Survey of superconductivity, Super conducting systems, High Tc Super conductors, Isotopic Effect, Critical Magnetic Field, Meissner Effect, London Theory and Pippards' equation, Classification of Superconductors (type I and Type II), BCS Theory of Superconductivity, Flux quantization, Josephson Effect (AC and DC), Practical Applications of superconductivity and their limitations, power application of superconductors.

(15 Lectures)

CO No. **Course code (EP-502(A)): Solid State Physics**

After successfully completing the course, student will be able to:

CO-1 Have brief idea about crystalline and amorphous substances, about lattice, unit cell, primitive cell, miller indices, Bravais lattices in two & three dimensions and crystal structures of Zinc Sulphide, Sodium Chloride and Diamond.

CO-2 Acquire knowledge about X-ray diffraction, Bragg's Law and experimental X-ray diffraction methods and about the reciprocal lattice to a simple cubic lattice, b.c.c. and f.c.c. lattice.

CO-3 Acquire knowledge about the electronic properties like electrical conductivity, resistivity, thermal conductivity, heat capacity etc. of metallic solids.

CO-4 Understand the basic idea about superconductors, their classifications and practical applications.

REFERENCES

1. Introduction to Solid State Physics, 7th Ed (1996) , C. Kittel, John Wiley & Sons, New Delhi
2. Solid State Physics, *An Introduction to Theory and Experiment*, H. Ibach and H. Lüth, Springer-Verlag, Berlin, 1991
3. Solid State Physics, S.O. Pillai, New Age International Publishers (2007) New Delhi
4. Introduction to Superconductivity, M. Tinkham, McGraw-Hill, New York
5. Solid State Physics (2000), A.J. Dekkar, Mc Millan India Ltd New Delhi
6. Solid State Physics (2003), N.W. Ascroft N W and N.D. Mermin, Harcourt Asia, Singapore
7. Solid State Physics: An introduction to theory and Experiment, H. Ibach and H.Luth

8. Solid State Physics (1993), H.V. Keer, Wiley Eastern Ltd, New Delhi
9. Solid State Physics (1990), C.M. Kachhava, Tata Mc Graw Hill Co Ltd, New Delhi
10. Solid State Physics (1995), Gupta, Vikas Publishing House Pvt Ltd, New Delhi

M. Sc. Engineering Physics
Semester-V
Subject: Physics
(Course Type- Discipline Specific Elective, Course Code: EP-502(B))
Nomenclature: Medical Physics
No. of credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.

UNIT-I

PHYSICS OF THE BODY-I

Basic Anatomical Terminology: Standard Anatomical Position, Planes, Familiarity with terms like- Superior, Inferior, Anterior, Posterior, Medial, Lateral, Proximal and Distal, Mechanics of the body: Skeleton, forces, and body stability. Muscles and dynamics of body movement, Physics of Locomotors Systems: joints and movements, Stability and Equilibrium. Energy household of the body: Energy balance in the body, Energy consumption of the body, Heat losses of the body, Thermal Regulation. Pressure system of body: Physics of breathing, Physics of cardiovascular system.

PHYSICS OF THE BODY-II

Acoustics of the body: Nature and characteristics of sound, Production of speech, Physics of the ear, Diagnostics with sound and ultrasound. Optical system of the body: Physics of the eye. Electrical system of the body: Physics of the nervous system, Electrical signals and information transfer.

(15 Lectures)

UNIT-II

PHYSICS OF DIAGNOSTIC AND THERAPEUTIC SYSTEMS-I

X-Rays: Electromagnetic spectrum, production of X-rays, X-ray spectra, Bremsstrahlung, Characteristic X-ray. X-ray tubes & types: Coolidge tube, X-ray tube design, tube cooling stationary mode, Rotating anode X-ray tube, Tube rating, quality and intensity of X-ray. X-ray generator circuits, half wave and full wave rectification, filament circuit, kilo voltage circuit, types of X-Ray Generator, high frequency generator, exposure timers and switches, HT cables, HT generation.

RADIATION PHYSICS

Radiation units exposure, absorbed dose, units: rad, gray, relative biological effectiveness, effective dose, inverse square law, Interaction of radiation with matter Compton & photoelectric effect, Rem & Sievert, linear attenuation coefficient.

RADIATION DETECTORS

Thimble chamber, condenser chambers, Geiger Muller counter, Scintillation counters and Solid State detectors, ionization chamber, Dosimeters, survey methods, area monitors, TLD, Semiconductor detectors.

(15 Lectures)

UNIT-III

MEDICAL IMAGING PHYSICS

Evolution of Medical Imaging, X-ray diagnostics and imaging, Physics of nuclear magnetic resonance (NMR), NMR imaging, MRI Radiological imaging, Ultrasound imaging, Physics of Doppler with applications and modes, Vascular Doppler. Radiography: Filters, grids, cassette, X-ray film, film processing, fluoroscopy. Computed tomography scanner- principle & function, display, generations, mammography. Thyroid uptake system and Gamma camera (Only Principle, function and display).

PHYSICS OF DIAGNOSTIC AND THERAPEUTIC SYSTEMS-II

Diagnostic nuclear medicine: Radiopharmaceuticals for radioisotope imaging, Radioisotope imaging equipment, Single photon and positron emission tomography. Therapeutic nuclear medicine: Interaction between radiation and matter Dose and isodose in radiation treatment. Medical Instrumentation: Basic Ideas of Endoscope and Cautery, Sleep Apnea and Cpap Machines, Ventilator and its modes.

(15 Lectures)

UNIT-IV

RADIATION ONCOLOGY PHYSICS

External Beam Therapy (Basic Idea): Telecobalt, Conformal Radiation Therapy (CRT), 3DCRT, IMRT, Image Guided Radiotherapy, EPID, Rapid Arc, Proton Therapy, Gamma Knife, Cyber Knife, Contact Beam Therapy (Basic Idea): Brachytherapy-LDR and HDR, Intra Operative Brachytherapy, Radiotherapy, kilo voltage machines, deep therapy machines, Telecobalt machines, Medical linear accelerator, Basics of Teletherapy units, deep x-ray, Telecobalt units, medical linear accelerator, Radiation protection, external beam

characteristics, dose maximum and build up – bolus, percentage depth dose, tissue maximum ratio and tissue phantom ratio, Planned target Volume and Gross Tumour Volume.

RADIATION AND RADIATION PROTECTION

Principles of radiation protection, protective materials-radiation effects, somatic, genetic stochastic and deterministic effect. Personal monitoring devices: TLD film badge, pocket dosimeter, OSL dosimeter, Radiation dosimeter, Natural radioactivity, Biological effects of radiation, Radiation monitors, Steps to reduce radiation to Patient, Staff and Public, Dose Limits for Occupational workers and Public. AERB: Existence and Purpose.

(15 Lectures)

CO No.	**Course code (EP-502(B)): Medical Physics**
	After successfully completing the course, student will be able to:
CO-1	Learn about the human body, its anatomy, physiology and biophysics, the Physics of the senses, exploring its performance as a physical machine.
CO-2	Gain knowledge with reference to working of various diagnostic tools, medical imaging techniques, how ionizing radiation interacts with matter, how it affects living organisms and how it is used as a therapeutic technique and radiation safety practices.
CO-3	Have functional knowledge regarding need for radiological protection and the sources of an approximate level of radiation exposure for treatment purposes.
CO-4	Gain a broad and fundamental understanding of Physics while developing particular expertise in medical applications.

REFERENCES

1. Medical Physics, J.R. Cameron and J.G. Skofronick, Wiley (1978)
2. Basic Radiological Physics Dr. K. Thayalan - Jayapee Brothers Medical Publishing Pvt. Ltd. New Delhi (2003)
3. Christensen's Physics of Diagnostic Radiology: Curry, Dowdey and Murry - Lippincot Williams and Wilkins (1990)
4. Physics of Radiation Therapy: F M Khan - Williams and Wilkins, Third edition (2003)
5. Physics of the human body, Irving P. Herman, Springer (2007).
6. The essential physics of Medical Imaging: Bushberg, Seibert, Leidholdt and Boone Lippincot Williams and Wilkins, Second Edition (2002)
7. Handbook of Physics in Diagnostic Imaging: R.S. Livingstone: B.I. Publication Pvt Ltd.

M. Sc. Engineering Physics
Semester-V
Subject: Physics
(Course Type- Discipline Specific Elective, Course Code: EP-503 (A)
Nomenclature: PHYSICS PRACTICAL-V (A)
No. of Credits: 2

Max. Marks: 50
Time: 3 hrs.

Special Note: -

1. Do any eight experiments from the given list of experiments.
2. The students are required to perform and calculate the error involved in a particular experiment in the final examination.
3. The Practical examination will be held in single session of 3 hours.

Distribution of Marks:

Experiment	25 marks
Viva- voce	15 marks
Lab Record	10 marks
Total	50 marks

LIST OF EXPERIMENTS

1. Study of Hysteresis curve by CRO.
2. To measure the resistivity of a semiconductor (Ge) crystal with temperature by Four Probe Method (from room temperature to 150 ^{o}C) and to determine its band gap.
3. To measure the Dielectric constant of a dielectric materials with frequency.
4. To determine the elastic constant of quartz crystal.
5. Velocity of Ultrasonic waves by grating formation in CCl_4.
6. To determine the Hall coefficient of a semiconductor sample.
7. To find the magnetic susceptibility of a solids.
8. To study the PE Hysteresis curve of a ferroelectric crystal.
9. To draw the Platue of G.M. Counter.
10. To draw the Mass Attenuation coefficient by G.M. Counter.

CO No. **Course code (EP-503(A)) : Physics Practical-V-A**

After successfully completing the course, student will be able to:

CO-1 Perform experiments to determine resistance & band gap of semiconductor materials and be able to study the ferroelectric properties of ferroelectric materials.

CO-2 Familiar with the use and proper handling of different instruments such as CRO, dielectric setup, G.M.Counter, Gauss meter etc.

CO-3 Draw the platue of G.M. Counter & determine the Mass Attenuation coefficient by G.M. Counter.

CO-4 Learn to present observations, results and analysis in suitable and presentable form.

REFERENCES

1. B.Sc. Practical Physics, C.L. Arora, S. Chand Publisher, New Delhi
2. Advanced Level Practical Physics, M. Nelkon and Ogborn, Henemann Education Books Ltd., New Delhi
3. Practical Physics, S.S. Srivastava and M.K. Gupta, Atma Ram & Sons, Delhi
4. Practical Physics , S.L. Gupta and V. Kumar, Pragati Prakashan Meerut
5. Modern Approach to Practical Physics, R.K. Singla, Modern Publishers, Jalandhar
6. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop,1971, Asia Publishing House

M. Sc. Engineering Physics
Semester-V
Subject: Physics
(Course Type- Discipline Specific Elective, Course Code: EP-503 (B))
Nomenclature: Physics Practical V (B)
No. of Credits: 2

Max. Marks: 50
Time: 3 hrs.

Special Note: -

1. Do any eight experiments from the given list of experiments.
2. The students are required to perform and calculate the error involved in a particular experiment in the final examination.
3. The Practical examination will be held in single session of 3 hours.

Distribution of Marks:

Experiment	25 marks
Viva- voce	15 marks
Lab Record	10 marks
Total	50 marks

MATHEMATICAL PHYSICS

The aim of this course is not just to teach computer programming and numerical analysis but to emphasize its role in solving problems in Physics.

- Highlights the use of computational methods to solve physical problems.
- Use of computer language as a tool in solving physics problems (applications).
- The course will consist of lectures (both theory and practical) in the Computer Lab.
- Evaluation done not on the programming but on the basis of formulating the problem.
- Aim at teaching students to construct the computational problem to be solved.
- Students can use anyone operating system Linux or Microsoft Windows

Topics	Description with Applications
Introduction and Overview	Computer architecture and organization, memory and Input/output devices.
Basics of scientific computing	Binary and decimal arithmetic, Floating point numbers, algorithms, Sequence, Selection and Repetition, single and double precision arithmetic, underflow & overflow emphasize the importance of making equations in terms of dimensionless variables, Iterative methods.
Errors and error Analysis	Truncation and round off errors, Absolute and relative errors, Floating point computations.
Review of C & C++ Programming fundamentals	Introduction to Programming, constants, variables and data types, operators and Expressions, I/O statements, scanf and

	printf, c in and c out, Manipulators for data formatting, Control statements (decision making and looping statements) (If-statement. If-else Statement. Nested if Structure. Else-if Statement. Ternary Operator. Goto Statement. Switch Statement. Unconditional and Conditional Looping. While-Loop. Do-While Loop. FOR Loop. Break and Continue Statements. Nested Loops), Arrays (1D&2D) and strings, user defined functions, Structures and Unions, Idea of classes and objects.
Programs: using C/C++ language	Sum & average of a list of numbers, largest of a given list of numbers and its location in the list, sorting of numbers in ascending-descending order, Binary search.
Random number generation	Area of circle, area of square, volume of sphere, value of pi (π)
Solution of Algebraic and Transcendental equations by Bisection, Newton Raphson and Secant methods	Solution of linear and quadratic equation, solving α = tan α; $I = I_o((Sin\ \alpha\ \|\alpha\ )^2$ in optics
Interpolation by Newton Gregory Forward and Backward difference formula, Error estimation of linear interpolation	Evaluation of trigonometric functions e.g. Sin θ, Cos θ, tan θ, etc.
Numerical differentiation (Forward and Backward difference formula) and Integration (Trapezoidal and Simpson rules), Monte Carlo method	Given Position with equidistant time data to calculate velocity and acceleration and vice-versa. Find the area of B-H Hysteresis loop
Solution of Ordinary Differential Equations (ODE) First order Differential equation Euler, modified Euler and Runge-Kutta (RK) second and fourth order methods	First order differential equation • Radioactive decay • Current in RC, LC circuits with DC source • Newton's law of cooling • Classical equations of motion Attempt following problems using RK 4 order method: • Solve the coupled differential equations $\frac{dx}{dy}$ = y + x–$\frac{x3}{3}$; $\frac{dy}{dx}$ =–*x* for four initial conditions x(0) = 0, y(0) = -1, -2, -3, -4. Plot x vs y for each of the four initial conditions on the same screen for 0 ≤ t ≤ 15 The differential equation describing the motion of a pendulum is $\frac{d2\theta}{dt2} = -Sin\theta.$ The pendulum is released from rest at an angular displacement α, i.e. υ (0)= α and υ'(0) = 0. Solve the equation for α = 0.1, 0.5 and 1.0 and plot υ as a function of time in the range 0 ≤ t ≤ 8π. Also plot the analytic solution valid for small υ (sin(υ) = υ

MEDICAL PHYSICS

1. Understanding the working of a manual Hg Blood Pressure monitor and measure the Blood Pressure.
2. Understanding the working of a manual optical eye-testing machine and to learn eye-testing.
3. Correction of Myopia (short sightedness) using a combination of lenses on an optical bench/breadboard.
4. Correction of Hypermetropia/Hyperopia (long sightedness) using a combination of lenses on an optical bench/breadboard.
5. To learn working of Thermoluminescent dosimeter (TLD) badges and measure the background radiation.
6. Familiarization with Geiger-Muller (GM) Counter and to measure background radiation.
7. Familiarization with Radiation meter and to measure background radiation.
8. Familiarization with the Use of a Vascular Doppler.

CO No.	**Course code (EP-503(B)) : Physics Practical-B**

After successfully completing the course, student will be able to:

CO-1 Acquire proficiency in computing integrations and in solving differential equations by various methods. Also be able to learn about the basic theory of errors, their analysis, and estimation with examples of simple experiments in Physics.

CO-2 Learn the fundamentals of the C and C++ programming languages and their applications in solving simple physical problems involving interpolations, differentiations, integrations, differential equations as well as finding the roots of equations.

CO-3 Have hands-on and gain knowledge with reference to working of various diagnostic tools and medical equipment.

CO-4 Acquire a broad and fundamental understanding of Physics while developing particular expertise in medical applications and appreciate the applications of Physics to clinical medicine.

REFRENCES

1. Introduction to Numerical Analysis, S.S. Sastry, 5thEdn., 2012, PHI Learning Pvt. Ltd.
2. Schaum's Outline of Programming with C++. J.Hubbard, 2000, McGraw-Hill Publications.
3. Numerical Recipes in C++: The Art of Scientific Computing, W.H. Pressetal., 3rdEdn., 2007, Cambridge University Press.
4. A first course in Numerical Methods, Uri M. Ascher and Chen Greif, 2012, PHI Learning.
5. Elementary Numerical Analysis, K.E. Atkinson, 3rdEdn., 2007, Wiley India Edition.

6. Numerical Methods for Scientists and Engineers, R.W. Hamming, 1973, Courier Dover Pub.
7. An Introduction to Computational Physics, T. Pang, 2ndEdn., 2006, Cambridge Univ. Press.
8. Basic Radiological Physics Dr. K. Thayalan - Jayapee Brothers Medical Publishing Pvt. Ltd. New Delhi (2003).
9. Christensen's Physics of Diagnostic Radiology: Curry, Dowdey and Murry - Lippincot Williams and Wilkins (1990)
10. Physics of Radiation Therapy: F M Khan - Williams and Wilkins, Third edition (2003).
11. The essential physics of Medical Imaging: Bushberg, Seibert, Leidholdt and Boone Lippincot Williams and Wilkins, Second Edition (2002).
12. The Physics of Radiology-H E Johns and Cunningham.
13. Advanced Practical Physics for students, B.L. Flint & H.T. Worsnop, 1971, Asia Publishing House.
14. Handbook of Physics in Diagnostic Imaging: Roshan S. Livingstone: B. I. Publications Pvt Ltd.
15. A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition, 2011, Kitab Mahal, New Delhi.

M. Sc. Engineering Physics
Semester – V
Subject: Mathematics
(Course Type- Discipline Specific Elective, Course Code: MT-501(A))
Nomenclature: Linear Algebra
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. The examiner will set 8 questions asking two questions from each unit by taking course outcomes (COs) into consideration.
2. The examinee will be required to attempt 5 questions, selecting at least one question from each unit.

Unit-I:

Vector spaces. Subspaces. Algebra of subspaces. Quotient space. Linear combination of vectors. Linear span. Linear dependence and independence of vectors. Bases and dimension. Dimension of subspaces.

Linear transformations. Null space. Range space. Matrix representation of a linear transformation. Rank and nullity of a linear transformation. Algebra of linear transformations.

Unit-II:

Isomorphism of vector spaces, Isomorphism theorems. Dual and second dual of a vector space, Transpose of a linear transformation, Eigen vectors and eigen values of a linear transformation, Characteristic polynomial and Cayley–Hamilton theorem, Minimal polynomial.

Unit-III:

Inner product spaces and orthogonality, Cauchy–Schwarz inequality, Gram–Schmidt orthog-onalisation, Diagonalisation of symmetric matrices.

Unit-IV:

Adjoint of a linear operator; Hermitian, unitary and normal linear transformations; Jordan canonical form, Triangular form, Trace and transpose, Invariant subspaces.

Course Outcomes: This course will enable the students to:

1. Understand the concepts of vector spaces, subspaces, bases and their properties; linear transformations and their rank and nullity and to use those concepts for problem solving.
2. Learn isomorphism of vector spaces, dual of a vector space, eigen values, eigen vectors and characteristic polynomial of linear transformations and their further use in investigation and solution of problems.
3. Have knowledge of inner product spaces, orthogonalisation and diagonalization of matrices/ linear transformations and to apply that in further learning and for scientific applications.
4. Learn adjoint operation, Hermitian, unitary, normal, canonical and triangular forms of linear transformations and related problem solving.

Recommended Text Books:

1. Stephen H. Friedberg, Arnold J. Insel & Lawrence E. Spence (2003). *Linear Algebra* (4th edition). Prentice-Hall of India Pvt. Ltd.
2. Kenneth Hoffman & Ray Kunze (2015). *Linear Algebra* (2nd edition). Prentice-Hall.
3. I. M. Gel'fand (1989). *Lectures on Linear Algebra.* Dover Publications.
4. Nathan Jacobson (2009). *Basic Algebra* I & II (2nd edition). Dover Publications.
5. Serge Lang (2005). *Introduction to Linear Algebra* (2nd edition). Springer India.
6. Vivek Sahai & Vikas Bist (2013). *Linear Algebra* (2nd Edition). Narosa Publishing House.
7. Gilbert Strang (2014). *Linear Algebra and its Applications* (2nd edition). Elsevier.

M. Sc. Engineering Physics
Semester – V
Subject: Mathematics
(Course Type- Discipline Specific Elective, Course Code: MT-501(B))
Nomenclature: Partial Differential Equations and Integral Transforms
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. The examiner will set 8 questions asking two questions from each unit by taking course outcomes (COs) into consideration.
2. The examinee will be required to attempt 5 questions, selecting at least one question from each unit.

Unit-I:

Classification of linear partial differential equations of second order, Hyperbolic, parabolic and elliptic types, Reduction of second order linear partial differential equations to Canonical (Normal) forms and their solutions. Cauchy's problem for second order partial differential equations, Characteristic equations and characteristic curves of second order partial differential equation.

Unit-II:

Solution of linear hyperbolic equations. Monge's method for solving non-linear second order partial differential equations.

Laplace equation: elementary solutions of Laplace's equation, families of equipotential surfaces.

Method of separation of variables: Solution of Laplace's equation, Wave equation and Diffusion (Heat) equation in one and two dimensions Cartesian Co-ordinate system.

Unit-III:

Laplace Transforms – Existence theorem for Laplace transforms, Linearity of the Laplace transforms, Shifting proprties, Laplace transforms of derivatives and integrals, Differentiation and integration of Laplace transforms, Convolution theorem, Inverse Laplace transforms, convolution theorem, Inverse Laplace transforms of derivatives and integrals, solution of differential equations using Laplace transform.

Unit-IV:

Fourier transforms: Linearity property, Shifting, Modulation, Convolution Theorem, Fourier Transform of Derivatives, Parseval's identity for Fourier transforms, relation between Laplace and Fourier transform. Solution of differential Equations using Fourier Transforms.

Course Outcomes: This course will enable the students to:

1. Learn classification of second order partial differential equations, their canonical forms, and methods of solving those. Find characteristic equations and curves. Apply this knowledge to solve problems of science and society.
2. Model physical phenomena using partial differential equations such as the Laplace, heat and wave equations and to solve these equations. Learn solving non-linear equations by Monge's method. Apply these methods as a tool for modelling and solving real world problems.
3. Know about Laplace transforms and its properties in detail and to apply those in solving differential equations.
4. Familiarize with Fourier transforms of functions, properties of Fourier transform, inverse Fourier transforms and relation between Laplace and Fourier transforms. Develop skill of applying Fourier transforms to solve differential equations.

Recommended Text Books:

1. Erwin Kreyszig (2011). *Advanced Engineering Mathematics* (10th edition). Wiley.
2. Tyn Myint-U & Lokenath Debnath (2013). *Linear Partial Differential Equation for Scientists and Engineers* (4th edition). Springer India.
3. H. T. H. Piaggio (2004). An Elementary Treatise on *Differential Equations and Their Applications.* CBS Publishers.
4. S. B. Rao & H. R. Anuradha (1996). *Differential Equations with Applications*. University Press.
5. Ian N. Sneddon (2006). *Elements of Partial Differential Equations*. Dover Publications.
6. Murray R. Spiegel (2005). *Laplace Transforms*. Schaum's Outline Series.
7. Ian N. Sneddon (1974). *The Use of Integral Transforms*. McGraw Hill.

M. Sc. Engineering Physics
Semester – V
Subject: Mathematics
(Course Type- Discipline Specific Elective, Course Code: MT-502(A))
Nomenclature: Analytical Geometry
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. The examiner will set 8 questions asking two questions from each unit by taking course outcomes (COs) into consideration.
2. The examinee will be required to attempt 5 questions, selecting at least one question from each unit.

Unit-I:

General equation of second degree: Classification of conic sections; centre, asymptotes, axes, eccentricity, foci and directrices of conics. Tracing of conics. Tangent at any point to the conic, chord of contact, pole of line to the conic, director circle of conic. Polar equation of a conic, tangent and normal to the conic.

Unit-II:

System of conics. Confocal conics.

Sphere: General form, Plane section of a sphere. Sphere through a given circle. Intersection of two spheres, tangent plane and line, polar plane and line, orthogonal spheres, length of tangent radical plane of two spheres, co-axial system of spheres

Unit-III:

Cone: Equation of a cone, right circular cone, quadric cone, enveloping cone. Tangent plane and condition of tangency, reciprocal cone. Conditions for having mutually perpendicular generatoes and for tangent palnes.

Cylinder: Right circular cylinder and enveloping cylinder.

Unit-IV:

Central Conicoids: Equation of tangent plane. Director sphere. Normal to the conicoids. Polar plane of a point. Enveloping cone of a coincoid. Enveloping cylinder of a coincoid. Paraboloids.

Course Outcomes: This course will enable the students to:

1. Understand the concept of a second degree equation representing different conic sections and its classification and properties. Learn terms related to conic sections and their use in problem solving.
2. Know representation of system of conics and confocal conics and related results. Learn general form of equation of a sphere and to solve problems related to intersection of spheres, tangent plane and line, orthogonality, length of tangent and co-axial system of spheres. Apply this knowledge to investigate and solve problems.
3. Learn equations of cones and cylinders and then to solve related problems. Apply knowledge for problem solving and life-long learning.
4. Familiarize with concepts of conicoids and related tangent plane, director sphere, normal, envelop and to make further use thereof.

Recommended Text Books:

1. Robert J. T. Bell (1994). *An Elementary Treatise on Coordinate Geometry of Three Dimensions*. Macmillan India Ltd.
2. D. Chatterjee (2009). *Analytical Geometry: Two and Three Dimensions*. Narosa Publishing House.
3. Shanti Narayan and P.K. Mittal (2007). *Analytical Solid Geometry*. S. Chand.
4. J.H. Kindle (1990). *Analytic Geometry*. Schaum Outline Series
5. Gordon Fuller and Dalton Tarwater (1992). *Analytic Geometry*. Pearson.

M. Sc. Engineering Physics
Semester – V
Subject: Mathematics
(Course Type- Discipline Specific Elective, Course Code: MT-502(B))
Nomenclature: Mechanics – II
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. The examiner will set 8 questions asking two questions from each unit by taking course outcomes (COs) into consideration.
2. The examinee will be required to attempt 5 questions, selecting at least one question from each unit.

Unit-I:

Virtual work. Forces in three dimensions. Poinsot's central axis.

Unit-II:

Wrenches. Null lines and planes. Stable and unstable equilibrium.

Unit-III:

Concepts of Conservative forces and Impulsive forces. Motion on smooth and rough plane curves.

Motion of a particle in three dimensions. Velocity and acceleration in terms of different co-ordinate systems. Moving axes.

Unit-IV:

Equation of motion under a central force, Differential equation of the orbit, (p, r) equation of the orbit, Apses and apsidal distances, Areal velocity, Characteristics of central orbits, Kepler's laws of planetary motion and their relation with Newton's laws of motion.

Course Outcomes: This course will enable the students to:

1. Understand the equilibrium of a body acted upon by forces in three dimensions and learn the principle of virtual work for a system of coplanar forces acting on a rigid body and central axis. Apply this knowledge to investigate and solve scientific problems.
2. Determine the stability of equilibrium of bodies. Understand wrenches, null lines and

planes.

3. Understand particle motion on a smooth or rough path in a plane and general motion of a rigid body. Apply theoretical concepts to problem solving.
4. Understand equation of motion of a body moving under a central force and Kepler's laws of the planetary motions. Solve problems of central orbits and planetary motion.

Recommended Text Books:

1. R. S. Varma (1962). *A Text Book of Statics*. Pothishala Pvt. Ltd.
2. P.L. Srivastava (1964). *Elementary Dynamics*. Ram Narain Lal, Beni Prasad Publishers Allahabad.
3. J. L. Synge & B. A. Griffith (1949). *Principles of Mechanics*. McGraw-Hill.
4. S.L. Loney (1995). *An Elementary Treatise on Statics*, Radha Publishing House.
5. S.L. Loney (2006). *An Elementary Treatise on the Dynamics of a Particle and of Rigid Bodies*. Read Books.
6. A. S. Ramsey (2009). *Statics*. Cambridge University Press.
7. A. S. Ramsey (2009). *Dynamics*. Cambridge University Press.
8. A.P. Roberts (2003). *Statics and Dynamics with Background in Mathematics*. Cambridge University Press.

M. Sc. Engineering Physics
Semester-V
Subject: Mathematics
(Course Type- Discipline Specific Elective, Course Code: MT-503)
Nomenclature: Mathematics practical-V
No. of Credits: 2

Max. Marks: 50
Time: 3 hrs.

Special Note: -

1. This course has two components, Problem Solving and Practical using LATEX software.
2. The examiner will set 4 questions at the time of practical examination asking two questions from the part (a) and two questions from the part (b) by taking course outcomes (COs) into consideration.
3. The examinee will be required to solve one problem from the part (a) and to execute one program successfully from the part (b). Equal weightage will be given to both the parts.
4. The evaluation will be done on the basis of practical record, viva-voce, write up and execution of the program.

5. The Practical examination will be held in a single session of 3 hours.

Distribution of Marks:

Experiment	25 marks
Viva- voce	15 marks
Lab Record	10 marks
Total	50 marks

c) **Problem Solving**- Questions related to the following problems will be solved and record of those will be maintained in the Practical Notebook:

Linear Algebra;

1. Practical problems to obtain basis by extending a given set of linearly independent set of vectors.
2. Practical problems to determine matrix representation of a linear transformation and to determine its rank and nullity.
3. Practical problems to determine Eigen Values & Eigen Vectors of a Linear Transformation.
4. Practical problems to find Dual of a Vector Space.
5. Practical problems to determine minimal polynomial of a linear transformation.
6. Practical problems to find orthogonal basis using Gram-Schmidt orthogonalisation

process.

7. Practical problems to diagonalise symmetric matrices.
8. Practical problems to determine Jordan Canonical Form of a matrix.

OR

PDE and Integral Transforms;

1. Practical problems to reduce PDEs into canonical form and then solving those.
2. Practical problems of finding the characteristics of second order partial differential equations.
3. Practical problems to solve PDEs with Monge's method.
4. Practical problems to solve wave equation (one and two dimensional).
5. Practical problems to solve Laplace equation.
6. Practical problems to solve heat equation.
7. Practical problems to solve differential equations by Laplace transform method.
8. Practical problems to solve differential equations by Fourier transform method.

d) **LATEX Practicals-** Following practicals of typing documents using LATEX software will be done and records of those will be maintained in the practical notebook and the candidates will be asked by the examiner to type a document using more than one of these listed commands at the time of Semester end practical examination:

1. Create a new file in the work directory with the name note1.tex and to write a simple document in latex using following commands:

```
\documentclass [a4paper, 12pt]{article}
\begin{document}
A paragraph of text
\end{document}
```

2. Create a document to write code for a title page using \title{...}, \author{...}, \date{...}, \today{...}, \maketitle {...} commands and \emph{...}, \texbf{...}, \texit{...} etc. commands.

3. Create a document to write a code to using \section{...}, \subsection{...}, \subsubsection{...}, \paragraph{...}, \subparagraph{…} commands and using environments to left justify, right justify, center and justify text.

4. Create a document to illustrate Latex commands for paper size, font size, font types and styles.
5. Create a document involving the mathematical equations.

   Use of $...$ and $$...$$ symbols and use of Power and Indices(^, _), Fractions(\frac{numerator}{denominator}), Roots(\sqrt{...}, \sqrt[…]{...}), Sums (\sum_{…}^{…}{…}), Product (\prod_{…}^{…}{…}), Integral (\int_a^b f(x) dx) within $...$ or $$...$$ symbols.
5. Use of commands for Greek letters and the commands \Re, \Im, \partial, \infty, \forall, \exists, \prime, \emptyset, \nabla, \surd,\parallel, \angle, \triangle, \backslash, \div, \vee, \wedge, \cap, \cup, \propto, \perp, \cong for Mathematical symbols and operations.
6. Use of \pm, \mp, \setminus, \cdot, \times,\ast, \hat, \bar,\dot, \ddot, \vec, \leq, \geq, \subset, \supset, \subseteq, \supseteq, \in, \neq,\equiv, \sim, \simeq, \approx commands for mathematical symbols and operators.
7. Create a document to produce equations using \begin{equation} … \end{equation} command and involving mathematical symbols, Greek letters and fractions.
8. Create a Latex document to illustrate the effect of enumerate listing and itemize listing.

Course Outcomes: This course will enable the students to:

1. Attain practical skills to solve problems of Linear Algebra

   OR
1. Attain practical skills to solve problems of Partial Differential Equations.
2. Have hands-on skills to type a document using LATEX software. Learn LATEX commands to create document and its type, sections; paper size, font type, size and styles; type mathematical and Greek symbols, mathematical equations and item listing.

M. Sc. Engineering Physics
Semester – V
Subject: Chemistry
(Course Type- Discipline Specific Elective, Course Code: CH-501(A))
Nomenclature: Heterocyclic and photochemistry
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

Section A

Heterocyclic compounds

Recapitulation of concept of Molecular orbital picture and aromatic characteristics of pyrrole, furan, thiophene and pyridine. Comparison of basicity of pyridine, piperidine and pyrrole. Mechanism of nucleophilic substitution reactions in pyridine derivatives.Introduction to condensed five and six-membered heterocycles. Preparation and reactions of indole, quinoline and isoquinoline with special reference to Fisher indole synthesis, Skraup synthesis and Bischler-Napieralski synthesis. Mechanism of electrophilic substitution reactions of, quinoline and isoquinoline.

(15 Hrs.)

Section B

Photochemistry:

Interaction of radiation with matter, difference between thermal and photochemical processes. Laws of photochemistry: Grotthus-Draper law, Stark-Einstein law (law of photochemical equivalence), Jablonski diagram depicting various processes occurring in the excited state, qualitative description of fluorescence, phosphorescence, non-radiative

processes (internal conversion, intersystem crossing), quantum yield, photosensitized reactions-energy transfer processes (simple examples), chemiluminescence. Brief introduction and description of photochemical reactions of simple carbonyl compounds, alkenes and aromatic compounds, Barton Reaction, Hofmann-Loffler-Freytag reaction

(15 Hrs.)

Course Outcomes:

CO1: Knowledge about condensed five and six-membered heterocyclic rings, basicity of pyridine, piperidine and pyrrole and the preparation and reactions of indole, quinoline and isoquinoline

CO2: Basic information of photochemistry and laws of photochemistry

CO3: To learn about Phosphorescence and fluorescence

Reference Books:

- Seymour, R.B. & Carraher, C.E. *Polymer Chemistry: An Introduction*, Marcel Dekker, Inc. New York, 1981.
- Odian, G. *Principles of Polymerization*, 4th Ed. Wiley, 2004.
- Billmeyer, F.W. *Textbook of Polymer Science*, 2nd Ed. Wiley Interscience, 1971.
- Ghosh, P. *Polymer Science & Technology*, Tata McGraw-Hill Education, 1991.
- K.K Rohatgi, Mukherjee,*Fundamentals of Photochemistry* , New Age International
- Pradeep's organic chemistry, Volume III.
- R Chand, organic chemistry, Volume III.
- Modern publications, organic chemistry, Volume III.
- New Age International (P) Ltd, Publishers, Volume III

M. Sc. Engineering Physics
Semester – V
Subject: Chemistry
(Course Type- Discipline Specific Elective, Course Code: CH-501(B))
Nomenclature: Bio-organic Chemistry
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

SECTION A

Nucleic Acids

Components of Nucleic acids: Adenine, guanine, thymine and Cytosine (Structure only), other components of nucleic acids, Nucleosides and nucleotides (nomenclature), Structure of polynucleotides; Structure of DNA (Watson-Crick model)

Peptides and Proteins

Structural and functional classification of proteins. Primary & Secondary structures of peptides and proteins,Tertiary and Quaternary structure of proteins. Synthesis of simple peptides (upto dipeptides) by N-protection (t-butyloxycarbonyl and phthaloyl) & C-activating groups and Merrifield solid phase synthesis

15Hrs

SECTION B

Lipids

Introduction to lipids and their classification. Waxes-Introduction, structure and functions of bees wax, wool Wax, spermaceti wax, carnauba wax. Fatty acid

classification-cis and trans fatty acid, saturated and unsaturated fatty acid, Essential fatty acids and their functions, Structure and functions of triacylglycerol and sphingolipids. Fluid mosaic model of cell membrane.

Concept of Energy in Biosystems

Calorific value of food. Standard caloric content of carbohydrates, proteins and fats. Oxidation of foodstuff (organic molecules) as a source of energy for cells. Introduction to Metabolism (catabolism, anabolism), ATP: the universal currency of cellular energy, ATP hydrolysis and free energy change.

15hrs

Course Outcomes

CO1: Know about nucleic acids, nucleosides and nucleotides

CO2: Structure of DNA and RNA

CO3: Know about concept of lipids and their classification

CO4: Have knowledge about Structural and functional classification of proteins

Reference Books:

-

M. Sc. Engineering Physics
Semester – V
Subject: Chemistry
(Course Type- Discipline Specific Elective, Course Code: CH-502(A))
Nomenclature: Organometallic chemistry, Inorganic polymers and Quantum mechanics
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

SECTION-A

Organometallic chemistry **15 hrs**

Definition, classification and nomenclature of organometallic compounds, preparation, properties and bonding of alkyls of Li, Al, Hg and Sn, concept of hapticity of organic ligand, Structure and bonding in metal-ethylenic complexes, Structure of Ferrocene, classification in metal carbonyls, preparation, properties and bonding in mononuclear carbonyls

Silicones and Phosphazenes

Nomenclature, classification, prepration and uses of silicones, elastomers, polysiloxane copolymers, poly phosphazenes and bonding in triphosphazene.

SECTION-B

Quantum Mechanics-II

To show quantum mechanically that position and momentum cannot be predicated simultaneously, Extension of Schrödinger wave equation to two and three dimensional boxes, separation of variables, probability distribution, energy, degeneracy.

Qualitative treatment of simple harmonic oscillator model of vibrational motion:Setting up of Schrödinger equation and discussion of solution and wavefunctions.Vibrational energy of diatomic molecules and zero-point energy.

Angular momentum: Commutation rules, quantization of square of total angular momentum and z-component.

Rigid rotator model of rotation of diatomic molecules. Schrödinger equation,transformation to spherical polar coordinates. Separation of variables. Spherical harmonics. Discussion of solution.

Course Outcomes:

CO1: To study the nomenclature, classification, preparation and bonding in organometallic compounds and of metal carbonyls also.

CO2: To know about various inorganic clusters compounds with special reference to silicones and phosphazenes

CO3: To have sound knowledge about the concepts of dual nature of matter and its applications to obtain Schrödinger wave equation and angular momentum

CO4: To solve Schrödinger equation for a particle present in various systems viz., two and three-dimensional boxes, harmonic oscillator and rigid rotator

Reference books

- B. R. Puri, Madan S. Pathania , L. R. Sharma*Principles of Physical Chemistry* Vishal Publications
- Chandra, A. K. *Introductory Quantum Chemistry*Tata McGraw-Hill (2001).
- House, J. E. *Fundamentals of Quantum Chemistry* 2nd Ed. Elsevier: USA(2004).
- Lowe, J. P. & Peterson, K. *Quantum Chemistry*, Academic Press (2005).
- Pradeep's organic chemistry, Volume II and III.
- R Chand, organic chemistry, Volume III.
- Modern publications, organic chemistry, Volume II andIII.
- New Age International (P) Ltd, Publishers, Volume II and III

M. Sc. Engineering Physics
Semester – V
Subject: Chemistry
(Course Type- Discipline Specific Elective, Course Code: CH-502(B))
Nomenclature: Applied chemistry
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

SECTION-A (15Hrs.)

Bio inorganic chemistry

Metal ions present in biological system, classification on the basis of action (essential, non essential, trace, toxic), Metalloporphyrins with special reference to haemoglobin and myoglobin. Biological role of Na+, K+, Ca+2, Mg+2, Fe+2 ions, Cooperative effect, Bohr effect.

Acids and Bases

Arrhenius, Bronsted-lowry, Lux-flood, solvent system and Lewis concept of acids and bases, relative strength of acids and bases, levelling solvents, hard and soft acids and bases(HSAB), Applications of HSAB principle.

SECTION-B (15Hrs.)

Chemical Bonding

Chemical bonding: Covalent bonding, valence bond and molecular orbital approaches, LCAO-MO treatment of H_2^+. Bonding and antibonding orbitals. Qualitative extension to H_2. Comparison of LCAO-MO and VB treatments of H_2 (only wavefunctions, detailed solution not required) and their limitations.

Spectroscopy-II

Electronic spectroscopy: Franck-Condon principle, electronic transitions, singlet and

triplet states, fluorescence and phosphorescence, dissociation and predissociation,calculation of electronic transitions of polyenes using free electron model.

Nuclear Magnetic Resonance (NMR) spectroscopy: Principles of NMR spectroscopy,Larmor precession, chemical shift and low resolution spectra, different scales, spin-spin coupling and high resolution spectra, interpretation of PMR spectra of organic molecules.

Electron Spin Resonance (ESR) spectroscopy: Its principle, hyperfine structure, ESR of simple radicals.

Course Outcomes:

CO1: To know about basic concepts of bioinorganic chemistry with reference to metal ions present in biological systems

CO2: To study the biochemistry of dioxygen carriers especially hemoglobin and myoglobin

CO3: Introduce the concept of acids and bases to the students and also able to explain the various theories associated with them

CO4: To understand and apply valence bond and molecular orbital approaches to the treatment of hydrogen molecule and its ion

CO5: To have sound knowledge of the concept of interaction of electromagnetic radiation with matter and to be able to describe electronic, NMR and ESR spectra of various molecules

Reference Books:

- Pradeep's organic chemistry, Volume II and III.
- R Chand, organic chemistry, Volume III.
- Modern publications, organic chemistry, Volume II and III.
- New Age International (P) Ltd, Publishers, Volume III

M. Sc. Engineering Physics
Semester-V
Subject: Chemistry
(Course Type- Discipline Specific Elective, Course Code: CH-503)
Nomenclature: Chemistry practical-V
Credits: 2

Max. Marks: 50
Time: 6 hrs.

Special Note: -

The Practical examination will be held in two sessions of 3 hours each & the students are required to perform two experiments during the examination.

Distribution of Marks:

Experiment	15+15 marks
Viva- voce	5+5 marks
Lab Record	10 marks
Total	50 marks

Semimicro qualitative analysis of mixture containing not more than four radicals (excluding interfering, Combinations and insoluble's): Pb^{2+}, Hg^{2+}, Hg_2^{2+}, Ag^{+}, Bi^{3+}, Cu^{2+}, Cd^{2+}, As^{3+}, Sb^{3+}, Sn^{2+}, Fe^{3+}, Cr^{3+}, Al^{3+}, Co^{2+}, Ni^{2+}, Mn^{2+}, Zn^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}, Mg^{2+}, NH_4^{+}, CO_3^{2-}, S^{2-}, SO_3^{2-}, $S_2O_3^{2-}$, NO^{2-}, CH_3COO^{-}, Cl^{-}, Br^{-}, I^{-}, NO^{3-}, SO_4^{2-}, $C_2O_4^{2-}$, PO_4^{3-}, BO_3^{3-}

Thin Layer Chromatography

(Determination of R_f values and identification of organic Compounds) Separation of a mixture of coloured organic compounds using common organic solvents.

Find out the temporary and permanent hardness in given water sample by EDTA method.

Course Outcomes:

CO1: To analyze the given inorganic mixture qualitatively for various cations and anions present in them

CO2: Able to determine R_f values

CO3: Identification of organic compounds

CO4: Able to perform thin layer chromatography to separate various components present in the Mixture, determination of hardness of water.

M. Sc. Engineering Physics
Semester – VI
Subject: Chemistry
(Course Type-Skill Enhancement, Course Code: SEC-601(A))
Nomenclature: Clinical chemistry
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

SECTION A

Definition, uses and side effects of the following categories of drugs:

Antipyretics, analgesics & anti-inflammatory agents (paracetamol, asprin, mefenamic acid, ibuprofen and diclofenac); **Anti-tussive and expectorant** (dextromethorphan, bromhexene); **Decongestant** (Theophyline, pseudoephedrine, phenylpropanolamine); **Anti-alergic** (Citrizine, diphenhydramine); **Antiasthematic** (prednisone, budesonide)**; Antibacterial drugs** (ampicillin, amoxycillin, doxycycline, cephalexin, ciprofloxacin)**; antimalarial** (Chloroquine, cloroguanide),

Anti-amoebic (Metronidazole, tinidazole)**;Anthelmintic and anti-parasitic** (Mebendazole, Albendazole)**; Anticancer** (Chlorambucil, cyclophosphamide**), Antihypertensive** (amlodepin, atenolol)**; Cardiovascular drugs** (sorbitrate, diltiazem),

SECTION B

Common clinical chemistry tests: Normal range and significance of following clinical tests

Electrolytes (Sodium, Potassium, Chloride**), Renal (Kidney) Function Tests** (Creatinine, Blood urea nitrogen)**, Liver Function Tests** (Total protein (serum), Bilirubin; direct; indirect; total)**, Cardiac Markers, Minerals** (Calcium, Magnesium, Phosphate, Potassium)**, Blood Disorders** (Iron, Vitamin B12, Vitamin D, Folic acid), **Miscellaneous** (Glucose, Glycosylated hemoglobin, Uric acid)

Nutritional Chemistry: Fat soluble and water soluble vitamins (Sources, recommended levels and deficiency diseases; vitamin A, vitamin B_1, vitamin B_2, vitamin B_3, vitamin B_5, vitamin B_6, vitamin B_7, vitamin B_9, vitamin B_{12}, vitamin C, vitamin D, vitamin E, and vitamin K), **Reference Daily Intake and Roles in biological processes of following essential**

dietary minerals **(**Major minerals- calcium, phosphorus, potassium, sodium, and magnesium; Trace elements-sulfur, iron, chlorine, cobalt, copper, molybdenum, iodine, and selenium)

Course Outcomes:

CO1: To have a knowledge about different categories of drugs their uses and side effects

CO2: To know sources, recommended levels and deficiency diseases of fat soluble and water soluble vitamins

CO3: To get knowledge Reference Daily Intake and Roles in biological processes of following essential dietary minerals

Recommended Text Books:

1. Medicinal chemistry by Ashutosh kar
2. Medicinal chemistry by D. sriram and P. yogeeshwari
3. Berdanier, Carolyn D.; Dwyer, Johanna T.; Heber, David. Handbook of Nutrition and Food, Third Edition. CRC Press.
4. The vitamins: fundamental aspects of nutrition and health; G. F. Combs jr. and G.F. combs Sr, Academic press

M. Sc. Engineering Physics
Semester – VI
Subject: Chemistry
(Course Type-Skill Enhancement, Course Code: SEC-601(B))
Nomenclature: Chemistry lab- maintenance and handling
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

Section A (15hrs.)

Familiarization with chemical labeling, Handling of hazardous chemicals, Handling of glassware

Sodium metal disposal, Familiarization with chemical concepts related to solution preparation and standardization: Equivalent mass, molar mass, specific gravity, concentration (Normality, Molarity, Molality, %w/v, %w/w, %v/v, ppm, ppb solutions), Basicity, acidity, solutions of oxidizing and reducing agents. Determination of concentration and percentage purity. Standardization of solutions, Knowledge about primary and secondary standards.

Knowledge about indicators and preparation of indicator solutions, Knowledge about buffers and preparation of buffer solutions, Preparation of complexometric solutions (e.g. EDTA solutions) and titrations, Management of chemical waste.

Section B (15hrs.)

Purification of chemicals through distillation, crystallization, sublimation etc. Operating knowledge including calibration, handling and maintenance of Potentiometers. Knowledge about different electrodes (e.g. Ag, Pt, SCE, Ag|AgCl) and their upkeep, Operating knowledge including calibration and maintenance of pH-meters and glass electrode, Operating knowledge including calibration and maintenance of refractometer, polarimeter,

Operating knowledge including calibration and maintenance of conductometer, Operating knowledge including calibration and maintenance of Flame-photometer, Spectrophotometer, Interferometer, Dipole meter

Course Outcomes:

CO1: Have basic knowledge about chemicals and instruments present in the chemistry lab and also their handling and maintenance

CO2: Able to know about different concept of preparations of solution, indicators and buffer solutions in chemistry lab.

CO3: To know about various methods for the purification of various chemicals used in the lab

CO4: Have knowledge about the calibration, handling and maintenance of various instruments used in the chemistry laboratory

Reference Books:

- A text book of qualitataive analysis by A.I. Vogel
- A text book of quantitative analysis by A. I. vogel

M. Sc. Engineering Physics
Semester-VI
Subject: Physics
(Course Type-Discipline Specific Elective, Course Code: EP-601(A))
Nomenclature: Atomic & Molecular Spectroscopy
No. of credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4. 20% numerical problems are to be set.
5. Use of scientific (non-programmable) calculator is allowed.

UNIT-I

HISTORICAL BACKGROUND OF ATOMIC SPECTROSCOPY

Introduction of early observations, emission and absorption spectra, atomic spectra, wave number, spectrum of Hydrogen atom in Balmer series, Bohr atomic model(Bohr's postulates) , spectra of Hydrogen atom , explanation of spectral series in Hydrogen atom, un-quantized states and continuous spectra, spectral series in absorption spectra, effect of nuclear motion on line spectra (correction of finite nuclear mass), variation in Rydberg constant due to finite mass, short comings of Bohr's theory, Wilson sommerfeld quantization rule, de-Broglie interpretation of Bohr quantization law, Bohr's corresponding principle, Sommerfeld's extension of Bohr's model, Sommerfeld relativistic correction, Short comings of Bohr-Sommerfeld theory, Vector atom model**;** space quantization, electron spin, coupling of orbital and spin angular momentum, spectroscopic terms and their notation, quantum numbers associated with vector atom model, transition probability and selection rules.

(15 Lectures)

UNIT-II

VECTOR ATOM MODEL (SINGLE VALANCE ELECTRON)

Orbital magnetic dipole moment (Bohr megnaton), behavior of magnetic dipole in external magnetic filed; Larmors' precession and theorem Penetrating and Non-penetrating orbits, Penetrating orbits on the classical model**;** Quantum defect, spin orbit interaction energy of the single valance electron, spin orbit interaction for penetrating and non-penetrating orbits. quantum mechanical relativity correction, Hydrogen fine

spectra, Main features of Alkali Spectra and their theoretical interpretation, term series and limits, Rydeburg-Ritze combination principle, Absorption spectra of Alkali atoms. observed doublet fine structure in the spectra of alkali metals and its Interpretation, Intensity rules for doublets, comparison of Alkali spectra and Hydrogen spectrum .

(15 Lectures)

UNIT-III

VECTOR ATOM MODEL (TWO VALANCE ELECTRON)

Essential features of spectra of Alkaline-earth elements, Vector model for two valance electron atom: application of spectra. Coupling Schemes;LS or Russell – Saunders Coupling Scheme and JJ coupling scheme, Interaction energy in L-S coupling (sp, pd configuration), Lande interval rule, Pauli principal and periodic classification of the elements. Interaction energy in JJ Coupling (sp, pd configuration), equivalent and non-equivalent electrons, Two valance electron system-spectral terms of non-equivalent and equivalent electrons, comparison of spectral terms in L-S And J-J coupling. Hyperfine structure of spectral lines and its origin; isotope effect, nuclear spin.

(15 Lectures)

UNIT-IV

ATOM IN EXTERNAL FIELD

Zeeman Effect (normal and Anomalous),Experimental set-up for studying Zeeman effect, Explanation of normal Zeeman effect(classical and quantum mechanical), Explanation of anomalous Zeeman effect(Lande g-factor), Zeeman pattern of D1 and D2 lines of Na-atom, Paschen-Back effect of a single valence electron system. Weak field Stark effect of Hydrogen atom.

MOLECULAR PHYSICS

General Considerations, Electronic States of Diatomic Molecules, Rotational Spectra (Far IR and Microwave Region), Vibrational Spectra (IR Region), Rotator Model of Diatomic Molecule, Raman Effect, Electronic Spectra.

(15 LECTURES)

CO No. **Course code (EP-601(A)) : Atomic & Molecular spectroscopy**

After successfully completing the course, student will be able to:

CO-1 Acquire knowledge about the historical background and developments of atomic spectroscopy through the study of spectral series in Hydrogen atom, effect of nuclear motion on line spectra (correction of finite nuclear mass), short comings of Bohr's theory, Wilson sommerfeld quantization rule, Sommerfeld's extension of Bohr's model, Sommerfeld relativistic correction, Short comings of Bohr-Sommerfeld theory and finally Vector atom model.

CO-2 Understand and explain the vector atom model, various coupling schemes and atomic spectra of one and two electron atoms.

CO-3 Explain the influence on the spectra of atoms in the presence of external applied electric and magnetic field i.e. Zeeman effect, Paschen-Back effect, Stark effect.

CO-4 Have basic idea about the rotational, vibrational and rotational-vibrational spectra of diatomic molecules and basic idea of Raman Effect.

REFERENCES

1. Concept of Modern Physics (1987), A. Beiser, Mc Graw Hill Co Ltd. New Delhi
2. Atomic Physics (2007), J.B. Rajab, S Chand & Co, New Delhi
3. Atomic Physics Vol II (1991), J.H. Fewkes and J. Yarwood, Oxford University Press
4. Physics of Atoms and Molecules 2nd Ed (2009), B.H.Bransden and C.J. Joachain, Pearson Education, New Delhi
5. Fundamental of Molecular Spectroscopy,Colin N. Banwell and Elaine M. McCash, McGraw Hill Co Ltd. New Delhi
6. Atomic and Nuclear Physics Vol I (1996) S.N. Ghoshal, S. Chand & Com., New Delhi
7. Atomic and Nuclear Physics (1982), K. Gopalkrishnan, Mc Millan India, New Delhi
8. Elements of Spectroscopy S.L.Gupta, V. Kumar and R.C.Sharma, Pragati Prakashan, Meerut.

M. Sc. Engineering Physics
Semester-VI
Subject: Physics
(Course Type-Discipline Specific Elective, Course Code: EP-601(B))
Nomenclature: Elements of Modern Physics
No. of credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.

UNIT-I

INTRODUCTION TO MODERN PHYSICS

Planck's quantum, Planck's constant and light as a collection of photons; Photo-electric effect and Compton scattering, De Broglie wavelength and matter waves; Davisson Germer experiment, Problems with Rutherford model- instability of atoms and observation of discrete atomic spectra; Bohr's quantization rule and atomic stability; calculation of energy levels for hydrogen like atoms and their spectra.

(15 Lectures)

UNIT-II

HEISENBERG UNCERTAINTY PRINCIPLE AND SCHRODINGER WAVE EQUATION

Position measurement-gamma ray microscope thought experiment; Wave-particle duality, Heisenberg uncertainty principle- impossibility of a particle following a trajectory; Estimating minimum energy of a confined particle using uncertainty principle; Energy-time uncertainty principle. Two slit interference experiment with photons, atoms and particles; linear superposition principle as a consequence; Matter waves and wave amplitude; Schrodinger equation for non-relativistic particles; Momentum and Energy operators; stationary states; physical interpretation of wave function, probabilities and normalization; Probability and probability current densities in one dimension.

(15 Lectures)

UNIT-III

APPLICATION OF SCHRODINGER WAVE EQUATION

One dimensional infinitely rigid box- energy eigenvalues and eigenfunctions, normalization; Quantum dot as an example; Quantum mechanical scattering and tunnelling in one dimension -across a step potential and across a rectangular potential barrier, Size and structure of atomic nucleus and its relation with atomic weight; Impossibility of an electron being in the nucleus as a consequence of the uncertainty principle. Nature of nuclear force, NZ graph, semi-empirical mass formula and binding energy.

(15 Lectures)

UNIT-IV

BASIC CONCEPT IN NUCLEAR PHYSICS

Radioactivity: stability of nucleus; Law of radioactive decay; Mean life & half-life; α-decay; β-decay-energy released, spectrum and Pauli's prediction of neutrino; γ-ray emission. Fission and fusion, mass deficit, relativity and generation of energy; Fission - nature of fragments and emission of neutrons. Nuclear reactor: slow neutrons interacting with U^{235} Fusion and thermonuclear reactions. **(15 LECTURES)**

CO No. **Course code (EP-601(B)) : Elements of Modern Physics**

After successfully completing the course, student will be able to:

CO-1 Know main aspects of the inadequacies of classical mechanics and understand historical development of quantum mechanics and ability to discuss and interpret experiments that reveal the dual nature of matter.

CO-2 Understand the theory of quantum measurements, wave packets and uncertainty principle.

CO-3 Understand the central concepts of quantum mechanics: wave functions, momentum and energy operator, the Schrodinger equation, time dependent and time independent cases, probability density and the normalization techniques, skill development on problem solving e.g. one dimensional rigid box, tunneling through potential barrier, step potential, rectangular barrier.

CO-4 Understanding the properties of and structure of atomic nuclei, liquid drop model and nuclear shell model and mass formula. Acquire the ability to calculate the decay rates and lifetime of radioactive decays like alpha, beta, gamma decay.

REFERENCES

1. Concepts of Modern Physics, Arthur Beiser, 2009, McGraw-Hill
2. Modern Physics, John R. Taylor, Chris D. Zafiratos, Michael A.Dubson,2009, PHI Learning
3. Six Ideas that Shaped Physics: Particle Behave like Waves, Thomas A. Moore, 2003, McGraw Hill
4. Quantum Physics, Berkeley Physics Course Vol.4. E.H. Wichman, 2008, Tata McGraw-Hill Co.
5. Modern Physics, R.A. Serway, C.J. Moses, and C.A.Moyer, 2005, Cengage Learning.
9. Modern Physics, G. Kaur and G.R. Pickrell, 2014, McGraw Hill

M. Sc. Engineering Physics
Semester-VI
Subject: Physics
(Course Type-Discipline Specific Elective, Course Code: EP-602(A))
Nomenclature: Digital and Analog Circuits & Instrumentation
No. of credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4. 20% numerical problems are to be set.
5. Use of scientific (non-programmable) calculator is allowed.

UNIT-I

DIGITAL CIRCUITS

Difference between Analog and Digital Circuits, Binary Numbers, Decimal to Binary and Binary to Decimal Conversion, Logic Gates: AND, OR and NOT (Their realization using Diodes and Transistor), NAND and NOR Gates as Universal Gates, XOR and XNOR Gates. De Morgan's Theorems, Boolean Laws, Simplification of Logic Circuit using Boolean Algebra. Fundamental Products: Minterms and Maxterms. Conversion of a Truth Table into an Equivalent Logic Circuit by (i) Sum of Products Method and (ii) Karnaugh Map.

(15 Lectures)

UNIT-II

COMBINATIONAL LOGIC CIRCUITS

Binary Addition, Binary Subtraction (using 2's Complement Method). Half Adders and Full Adders, and Subtractors, 4-bit binary Adder-Subtractor. Decoder: Binary-coded-decimal (BCD) system, BCD-to-decimal decoder, Demultiplexer: 4-to-16 line decoder, decoder/lamp driver, Multiplexer (Data selector): Applications- Parallel to serial conversion, sequential data selection; Encoders. Seven segment Display, BCD-to-seven segment decoder.

(15 Lectures)

UNIT-III

OPERATIONAL AMPLIFIERS (BLACK BOX APPROACH)

Characteristics of an Ideal and Practical Op-Amp (IC 741), Open-loop & Closed-loop Gain. CMRR, concept of Virtual ground. Applications of Op-Amps: (i) Inverting and Non-inverting Amplifiers, (ii) Adder, (iii) Subtractor, (iv) Differentiator, (v) Integrator, (vi) Zero Crossing Detector (vii) Electronic analog computation (viii) Square wave generator (ix) Triangular wave generator.

(15 Lectures)

UNIT-IV

INSTRUMENTATIONS

Digital to analog converters: Weighted resistor type D/A converter, Ladder type D/A converter; Analog to Digital converter. Timer IC: IC 555 Pin diagram and its application as Astable & Monostable Multivibrator. Introduction to CRO: Block diagram of CRO, Applications of CRO (i) Study of Waveform (ii) Measurement of Voltage, Current, Frequency and Phase Difference.

(15 Lectures)

CO No. **Course code (EP-602(A)) : Digital and Analog Circuits & Instrumentation**

After successfully completing the course, student will be able to:

CO-1 Difference between analog and digital circuits and acquire knowledge about number systems, their interconversions, Basic logic gates, synthesis of circuits using Boolean algebra and Conversion of a Truth Table into an Equivalent Logic Circuit by (i) Sum of Products Method and (ii) Karnaugh Map.

CO-2 Understand and explain about the various Combinational digital systems like Half adders, full adders, BCD-to-decimal decoder, Demultiplexer, Multiplexer etc. and also be able to appreciate the applications of these devices.

CO-3 Realize the basics characteristics and implementation of operational amplifier for various applications like addition, subtraction, differentiation, integration, Waveform generator-square wave generator.

CO-4 Acquire knowledge about digital to analog and analog to digital signal conversion. Also understand the working and application of CRO.

REFERENCES

1. Integrated Electronics, J. Millman and C.C. Halkias, 1991, Tata Mc-Graw Hill.
2. Electronic devices and circuits, S. Salivahanan and N. Suresh Kumar, 2012, Tata Mc-Graw Hill.
3. Microelectronic Circuits, M.H. Rashid, 2nd Edn.,2011, Cengage Learning.
4. Modern Electronic Instrumentation & Measurement Tech., Helfrick & Cooper, 1990, PHI Learning.
5. Digital Principles & Applications, A.P. Malvino, D.P. Leach & Saha, 7th Ed., 2011,Tata Mc-Graw Hill
6. Microelectronic circuits, A.S. Sedra, K.C. Smith, A.N. Chandorkar, 2014, 6th Edn., Oxford University Press.
7. Fundamentals of Digital Circuits, A. Anand Kumar, 2nd Edition, 2009, PHI Learning Pvt. Ltd.
8. OP-AMP and Linear Digital Circuits, R.A. Gayakwad, 2000, PHI Learning Pvt. Ltd.

M. Sc. Engineering Physics
Semester-VI
Subject: Physics
(Course Type-Discipline Specific Elective, Course Code: EP-602(B))
Nomenclature: Embedded System: Introduction to Microcontroller
No. of credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.

UNIT-I

EMBEDDED SYSTEM ITRODUCTION, DESIGN & DEVELOPMENT

Introduction to embedded systems and general purpose computer systems, architecture of embedded system, classifications, applications and purpose of embedded systems, challenges and design issues in embedded systems, operational and non-operational quality attributes of embedded systems, Embedded system design and development: Embedded system development environment, file types generated after cross compilation, disassembler/ decompiler, simulator, emulator and debugging, embedded product development life-cycle, trends in embedded industry.

(15 Lectures)

UNIT-II

REVIEW OF MICROPROCESSORS

Organization of Microprocessor based system, 8085μp pin diagram and architecture, concept of data bus and address bus, 8085 programming model, instruction classification, subroutines, stacks and its implementation, delay subroutines, hardware and software interrupts. 8051 microcontroller: Introduction and block diagram of 8051 microcontroller, architecture of 8051, overview of 8051 family, 8051 assembly language programming, Program Counter and ROM memory map, Data types and directives, Flag bits and Program Status Word (PSW) register, Jump, loop and call instructions.

(15 Lectures)

UNIT-III

8051 I/O PORT PROGRAMMING

Introduction of I/O port programming, pin out diagram of8051 microcontroller, I/O port pins description and their functions, I/O port programming in 8051, (Using Assembly Language), I/O programming: Bit manipulation. Programming of 8051: 8051 addressing modes and accessing memory using various addressing modes, assembly language instructions using each addressing mode, arithmetic & logic instructions, 8051 programming in C:- for time

delay and I/O operations and manipulation, for arithmetic & logic operations, for ASCII and BCD conversions.

(15 Lectures)

UNIT-IV

TIMER AND COUNTER PROGRAMMING

Programming 8051 timers, counter programming. SERIAL PORT PROGRAMMING WITH AND WITHOUT INTERRUPT: Introduction to 8051 interrupts, programming timer interrupts, programming external hardware interrupts and serial communication interrupt, interrupt priority in the 8051. INTERFACING 8051 MICROCONTROLLER TO PERIPHERALS: Parallel and serial ADC, DAC interfacing, LCD interfacing. PROGRAMMING EMBEDDED SYSTEMS: Structure of embedded program, infinite loop, compiling, linking and locating, downloading and debugging.

(15 LECTURES)

CO No. **Course code (EP-602(B)) : Embedded System: Introduction to Microcontroller**

After successfully completing the course, student will be able to:

CO-1 Acquire knowledge about the embedded systems including its generic architecture, design and classifications, Embedded processors and microcontrollers.

CO-2 Learn about the organization of intel microprocessor 8085, its architecture, pin diagram, timing diagram, instruction set and programming in assembly language.

CO-3 Understand the organization of Intel 8051 microcontroller, its architecture, instruction set, programming and its memory organization, timing diagram and Input/output operations and manipulation for arithmetic and logical operations.

CO-4 Acquire knowledge about programming with and without interrupt service request. Interfacing parallel and serial ADC and DAC.

REFERENCES

1. Embedded Systems: Architecture, Programming & Design, R. Kamal, 2008, Tata McGraw Hill
2. The 8051 Microcontroller and Embedded Systems Using Assembly and C, M.A. Mazidi, J.G. Mazidi, and R.D. McKinlay, 2nd Ed., 2007, Pearson Education India.
3. Embedded Microcomputer System: Real Time Interfacing, J.W. Valvano, 2000, Brooks/Cole
4. Embedded Systems and Robots, Subrata Ghoshal, 2009, Cengage Learning
5. Introduction to embedded system, K.V. Shibu, 1st Edition, 2009, McGraw Hill
6. Microcontrollers in practice, I.Susnea and M.Mitescu, 2005, Springer.
7. Embedded Systems: Design & applications, 1/e S.F. Barrett, 2008, Pearson Education India
8. Embedded Microcomputer systems: Real time interfacing, J.W. Valvano 2011,Cengage Learning

M. Sc. Engineering Physics
Semester-VI
Subject: Physics
(Course Type-Discipline Specific Elective, Course Code: EP-603(A))
Nomenclature: PHYSICS PRACTICAL-VI (A)
No. of Credits: 2

Max. Marks: 50
Time: 3 hrs.

Special Note: -

1. Do any eight experiments from the given list of experiments.
2. The students are required to perform and calculate the error involved in a particular experiment in the final examination.
3. The Practical examination will be held in single session of 3 hours.

Distribution of Marks:

Experiment	25 marks
Viva- voce	15 marks
Lab Record	10 marks
Total	50 marks

LIST OF EXPERIMENTS

1. Determination of specific charge (e/m) by Thomson method.
2. To find Plank's constant.
3. Rydberg Constant by Hydrogen gas spectrum.
4. To determine the ionization potential of mercury.
5. To study the absorption spectra of iodine and to determine its dissociation energy.
6. To design a CB & CE amplifier of a given gain (mid-gain) using voltage divider bias.
7. To measure (a) Voltage, and (b) Frequency of a periodic waveform using a CRO
8. To verify and design AND, OR, NOT and XOR gates using NAND gates.
9. To minimize a given logic circuit. 4. Half adder, Full adder and 4-bit Binary Adder.
10. Adder-Subtractor using Full Adder I.C.
11. To study IV characteristics of PN diode, Zener and Light emitting diode
12. To design an inverting amplifier of given gain using Op-amp 741 and study its frequency response.
13. To design a non-inverting amplifier of given gain using Op-amp 741 and study its Frequency Response.
14. To study a precision Differential Amplifier of given I/O specification using Op amp.
15. To investigate the use of an op-amp as a Differentiator
16. To design a Wien Bridge Oscillator using an op-amp.

CO No.	Course code (EP-603A) : PHYSICS PRACTICAL-VI(A)

After successfully completing the course, student will be able to:

CO-1 Perform experiments to determine specific charge (e/m) by Thomson method, Plank's constant, Rydberg Constant etc.

CO-2 Perform experiments to realize the applications of different analog and digital devices like Operational amplifier, basic logic gates, Half & Full adders/Subtractors, Zener and Light emitting diode etc.

CO-3 Design and study CB & CE amplifier and also be able to carry out the Measurement of voltage and frequency of a periodic waveform using CRO.

CO-4 Have in-depth knowledge about the electronic circuit fundamentals, making of electrical connections and handling of instruments.

REFERENCES

1. B.Sc. Practical Physics, C.L. Arora, S. Chand Publisher, New Delhi.
2. Advanced Level Practical Physics, M. Nelkon and Ogborn, Henemann Education Books Ltd., New Delhi.
3. Practical Physics, S.S. Srivastava and M.K. Gupta, Atma Ram & Sons, Delhi.
4. Practical Physics , S.L. Gupta and V. Kumar, Pragati Prakashan Meerut.
5. Modern Approach to Practical Physics, R.K. Singla, Modern Publishers, Jalandhar.
6. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop,1971, Asia Publishing House.
7. Basic Electronics: A text lab manual, P.B. Zbar, A.P. Malvino, M.A. Miller, 1994, Mc-Graw Hill.
8. Electronics: Fundamentals and Applications, J.D. Ryder, 2004, Prentice Hall.
9. OP-Amps and Linear Integrated Circuit, R. A. Gayakwad, 4th edition, 2000, Prentice Hall.
10. Electronic Principle, Albert Malvino, 2008, Tata Mc-Graw Hill.

M. Sc. Engineering Physics
Semester-VI
Subject: Physics
(Course Type-Discipline Specific Elective, Course Code: EP-603(B))
Nomenclature: Physics Practical VI (B)
No. of Credits: 2

Max. Marks: 50
Time: 3 hrs.

Special Note: -

1. Do any eight experiments from the given list of experiments.
2. The students are required to perform and calculate the error involved in a particular experiment in the final examination.
3. The Practical examination will be held in single session of 3 hours.

Distribution of Marks:

Experiment	25 marks
Viva- voce	15 marks
Lab Record	10 marks
Total	50 marks

List of Experiments

1. To determine value of Boltzmann constant using V-I characteristic of PN diode.
2. To determine work function of material of filament of directly heated vacuum diode.
3. To determine value of Planck's constant using LEDs of at least 4 different colours.
4. To determine the ionization potential of mercury.
5. To determine the absorption lines in the rotational spectrum of Iodine vapour.
6. To study the diffraction patterns of single and double slits using laser source and measure its intensity variation using Photo sensor and compare with incoherent source – Na light.
7. To determine the value of e/m by magnetic focusing.
8. To setup the Millikan oil drop apparatus and determine the charge of an electron.
9. To find that the given numbers is prime or not using 8051.
10. To find the factorial of a number using 8051.
11. Write a program to make the two numbers equal by increasing the smallest number and decreasing the largest number using 8051.
12. Using 8051,Use one of the four ports of 8051 for O/P interfaced to eight LED's. Simulate binary counter (8 bit) on LED's.
13. Using 8051; Program to glow first four LED then next four using TIMER application.
14. Program to rotate the contents of the accumulator first right and then left using 8051.
15. Application of embedded systems: Temperature measurement, some information on LCD display, interfacing a keyboard Using 8051.

CO No. **Course code (EP-603B) : Physics Practical-VI (B)**

After successfully completing the course, student will be able to:

CO-1 Perform experiments to determine value of Boltzmann constant, work function of material of filament of directly heated vacuum diode, ionization potential of mercury etc.

CO-2 Study the diffraction patterns of single and double slits using laser source and measure its intensity variation using Photo sensor and compare with incoherent source – Na light.

CO-3 Design, fabricate, test and run the programs using 8051 microprocessor.

CO-4 Learn the applications of embedded systems such as temperature measurement, acquiring some information on LCD display and interfacing a keyboard Using 8051.

REFERENCES

1. Advanced Practical Physics for students, B.L. Flint & H.T. Worsnop, 1971, Asia Publishing House.
2. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
3. A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition, 2011, Kitab Mahal, New Delhi.
4. Embedded Systems: Architecture, Programming & Design, R. Kamal, 2008, Tata McGraw Hill
5. The 8051 Microcontroller and Embedded Systems Using Assembly and C, M.A. Mazidi, J.G. Mazidi, and R.D. McKinlay, 2nd Ed., 2007, Pearson Education India.
6. Embedded Microcomputor System: Real Time Interfacing, J.W. Valvano, 2000, Brooks/Cole
7. Embedded System, B.K. Rao, 2011, PHI Learning Pvt. Ltd.
8. Embedded Microcomputer systems: Real time interfacing, J.W.Valvano 2011, Cengage Learning.

M. Sc. Engineering Physics
Semester – VI
Subject: Mathematics
(Course Type-Discipline Specific Elective, Course Code: MT-601(A))
Nomenclature: Real Analysis–II
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. The examiner will set 8 questions asking two questions from each unit by taking course outcomes (COs) into consideration.
2. The examinee will be required to attempt 5 questions, selecting at least one question from each unit.

Unit-I:

Riemann integral, Integrabililty of continuous and monotonic functions, The Fundamental theorem of integral calculus. Mean value theorems of integral calculus.

Unit-II:

Improper integrals and their convergence, Comparison tests, Abel's and Dirichlet's tests, Frullani's integral, Integral as a function of a parameter. Continuity, Differentiability and integrability of an integral of a function of a parameter.

UNIT-III:

Definition and examples of metric spaces, Open spheres and closed spheres, Neighbourhoods, Open sets, Interior, exterior and boundary points, Closed sets, Limit points and isolated points, Interior and closure of a set, Boundary of a set, Bounded sets, Distance between two sets, Diameter of a set, Subspace of a metric space. Cauchy and Convergent sequences, Completeness of metric spaces, Cantor's intersection theorem.

UNIT-IV:

Dense sets and separable spaces, Nowhere dense sets and Baire's category theorem, Continuous and uniformly continuous functions, Homeomorphism, Banach contraction principle.

Compact spaces, Sequential compactness, Bolzano–Weierstrass property, Compactness and finite intersection property, Heine–Borel theorem.Continuous functions on compact spaces.

Course Outcomes: This course will enable the students to:

1. Learn basic theory of Riemann integration. Learn fundamental theorem and mean value theorem of integral calculus.
2. Understand improper integrals and to have knowledge to test their convergence. Understand integral as a function of a parameter. Apply this knowledge for problem solving.
3. Understand concepts of metric spaces, sub spaces and their properties. Learn open, closed and bounded sets, interior and limit points , Cauchy sequence and completeness.
4. Learn dense sets, compact and separable metric spaces and related results. Learn important theorems viz. Baire's category theorem, Banach contraction principle, Bolzano–Weierstrass property, Heine–Borel theorem. Use this basic knowledge for life -long learning purposes.

Recommended Text Books:

1. T.M. Apostol: Mathematical Analysis, Narosa Publishing House, New Delhi, 1985
2. R.R. Goldberg : Real analysis, Oxford & IBH publishing Co., New Delhi, 1970
3. D. Somasundaram and B. Choudhary : A First Course in Mathematical Analysis, Narosa Publishing House, New Delhi, 1997
4. Shanti Narayan : A Course of Mathematical Analysis, S. Chand & Co., New Delhi
5. E. T. Copson (1988). *Metric Spaces*. Cambridge University Press.
6. P. R. Halmos (1974). *Naive Set Theory*. Springer.
7. P. K. Jain & Khalil Ahmad (2019). *Metric Spaces*. Narosa.
8. S. Kumaresan (2011). *Topology of Metric Spaces* (2nd edition). Narosa.
9. Satish Shirali&Harikishan L. Vasudeva (2006). *Metric Spaces*. Springer-Verlag.
10. MicheálO'Searcoid (2009). *Metric Spaces*. Springer-Verlag.
8. G. F. Simmons (2004). *Introduction to Topology and Modern Analysis*. McGraw-Hill.

Semester – VI
Subject: Mathematics
(Course Type-Discipline Specific Elective, Course Code: MT-601(B))
Nomenclature: Complex Analysis
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. The examiner will set 8 questions asking two questions from each unit by taking course outcomes (COs) into consideration.
2. The examinee will be required to attempt 5 questions, selecting at least one question from each unit.

Unit-I:

Complex numbers and their representation, algebra of complex numbers; Complex plane, Open set, Domain and region in complex plane; Stereographic projection and Riemann sphere.

De Moivre's Theorem and its Applications. Expansion of trigonometrical functions. Direct circular and hyperbolic functions and their properties, Logarithm of a complex quantity, Summation of Trigonometric series.

Unit-II: Analytic Functions and Cauchy–Riemann Equations

Complex functions and their limits including limit at infinity; Continuity and differentiability of a complex valued function. Analytic functions; Cauchy–Riemann equations, Harmonic functions, necessary and sufficient conditions for differentiability. Analyticity and zeros of exponential, trigonometric and logarithmic functions.

Unit-III:

Line integral, Path independence. Branch cut and branch of multi-valued functions. Complex integration, Green's theorem, Anti-derivative theorem, Cauchy–Goursat theorem, Cauchy integral formula, Cauchy's inequality, Derivative of analytic function, Liouville's theorem, Fundamental theorem of algebra, Maximum modulus theorem and its consequences.

Unit-IV:

Sequences, series and their convergence, Taylor series and Laurent series of analytic functions, Power series, Radius of convergence, Integration and differentiation of power series, Absolute and uniform convergence of power series.

Course Outcomes: This course will enable the students to:

1. Visualize complex numbers as points of $\mathbb{R}^2$ and stereographic projection of complex plane on the Riemann sphere. Know De Moivre's Theorem and its Applications. Learn about trigonometric, circular and hyperbolic functions and their properties.
2. Understand the significance of differentiability and analyticity of complex functions leading to the Cauchy–Riemann equations. Apply knowledge to solve related problems.
3. Learn complex integration and other related concepts. Know and understand Green's theorem, Cauchy-Goursat theorem, Liouville's theorem in fundamental theorem of algebra, Maximum modulus theorem. Application of these results in problem solving.
4. Understand sequences, series and their convergence. Learn about Taylor series, Laurent series and Power series. Apply this knowledge to obtain series expansions of analytic functions.

Recommended Text Books:

1. Lars V. Ahlfors (2017). *Complex Analysis* (3rd edition). McGraw-Hill Education.
2. Joseph Bak & Donald J. Newman (2010). *Complex Analysis* (3rd edition). Springer.
3. James Ward Brown & Ruel V. Churchill (2009). *Complex Variables and Applications* (9th edition). McGraw-Hill Education.
4. John B. Conway (1973). *Functions of One Complex Variable*. Springer-Verlag.
5. E.T. Copson (1970). *Introduction to Theory of Functions of Complex Variable*. Oxford University Press.
6. Theodore W. Gamelin (2001). *Complex Analysis*. Springer-Verlag.
7. George Polya & Gordon Latta (1974). *Complex Variables*. Wiley.
8. H. A. Priestley (2003). *Introduction to Complex Analysis*. Oxford University Press.
8. E. C. Titchmarsh (1976). *Theory of Functions* (2nd edition). Oxford University Press.

M. Sc. Engineering Physics
Semester – VI
Subject: Mathematics
(Course Type-Discipline Specific Elective, Course Code: MT-602(A))
Nomenclature: Linear Programming
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. The examiner will set 8 questions asking two questions from each unit by taking course outcomes (COs) into consideration.
2. The examinee will be required to attempt 5 questions, selecting at least one question from each unit.

Unit-I:

Linear Programming Problems, Definition, objective function, constraints, Canonical and Standard forms. Graphical Approach for solving some Linear Programs, limitations of graphical method. Convex and polyhedral sets, Extreme points, Basic solutions, Basic Feasible Solutions, Correspondence between basic feasible solutions and extreme points.

Unit-II:

Theory of simplex method, concept of initial basic feasible solution, Optimality criterion, Improving a basic feasible solution, Unboundedness; Simplex algorithm and its tableau format; Artificial variables, Two-phase method, Big-*M* method.

Unit-III:

Formulation of the dual problem, Duality theorems, Unbounded and infeasible solutions in the primal, Solving the primal problem using duality theory.

Unit-IV:

Formulation of transportation problems, Methods of finding initial basic feasible solutions: North-west corner rule, Least cost method, Vogel approximation method, Algorithm for obtaining optimal solution; Formulation of assignment problems, Hungarian method.

Course Outcomes: This course will enable the students to:

1. Familiarize with terminology of linear programming problems (LPP) and all other associated concepts. Analyze and solve linear programming problems of real life situations. Obtain solution of linear programming problems with graphical method.
2. Understand the theory of Simplex method to solve linear programming problems. Application of knowledge of simplex algorithm in solving real life LPP by several methods.
3. Understand dual problems, duality theorem and to solve linear programming problems by making use of duality theorem. Use these tools for science and society.
4. Learn about transportation problems, their formulation and techniques to solve transportation and assignment problems. Attain skills to solve real life transportation problems by using specified methods.

Recommended Text Books:

1. Mokhtar S. Bazaraa, John J. Jarvis & Hanif D. Sherali (2010). *Linear Programming and Network Flows* (4th edition). John Wiley & Sons.
2. G. Hadley (2002). *Linear Programming*. Narosa Publishing House.
3. Frederick S. Hillier & Gerald J. Lieberman (2015). *Introduction to Operations Research* (10th edition). McGraw-Hill Education.
4. Hamdy A. Taha (2017). *Operations Research*: *An Introduction* (10th edition). Pearson.
5. Paul R. Thie & Gerard E. Keough (2014). *An Introduction to Linear Programming and Game Theory* (3rd edition). Wiley India Pvt. Ltd.

M. Sc. Engineering Physics
Semester – VI
Subject: Mathematics
(Course Type-Discipline Specific Elective, Course Code: MT-602(B))
Nomenclature: Probability and Statistics
No. of Credits: 3

Max. Marks: 75
Theory: 60
Internal Assessment: 15
Time: 3 hrs.

Note:-

1. The examiner will set 8 questions asking two questions from each unit by taking course outcomes (COs) into consideration.
2. The examinee will be required to attempt 5 questions, selecting at least one question from each unit.

Unit-I:

Basic notions of probability, Conditional probability and independence, Baye's theorem; Random variables - Discrete and continuous, Cumulative distribution function, Probability mass/density functions; Transformations, Mathematical expectation, Moments, Moment generating function, Characteristic function.

Unit-II:

Discrete distributions**:** Uniform, Bernoulli, Binomial, Negative binomial, Geometric and Poisson; Continuous distributions**:** Uniform, Gamma, Exponential, Chi-square, Beta and normal; Normal approximation to the binomial distribution.

Unit-III:

Joint cumulative distribution function and its properties, Joint probability density function, Marginal distributions, Expectation of function of two random variables, Joint moment generating function, Conditional distributions and expectations.

Unit-IV:

The Correlation coefficient, Covariance, Calculation of covariance from joint moment generating function, Independent random variables, Linear regression for two variables, The method of least squares, Bivariate normal distribution, Chebyshev's theorem, Strong law of large numbers, Central limit theorem and weak law of large numbers.

Course Outcomes: This course will enable the students to:

1. Learn probability, distribution function, probability density functions, mathematical expectation and moment generating function and use those for problem solving.
2. Understand uniform, binomial, Bernouli, geometric, gamma, exponential and normal distributions their uses in problem solving.
3. Learn joint distribution functions and expectation of function of two random variables.
4. Understand correlation, regression, least square fit and bivariate normal distribution. Learn Chebyshev's theorem, strong and weak law of large numbers and central limit theorem. Apply this knowledge and studied tools in investigation and solution of problems.

Recommended Text Books:

1. Robert V. Hogg, Joseph W. McKean & Allen T. Craig (2013). *Introduction to Mathematical Statistics* (7th edition), Pearson Education.
2. Irwin Miller &Marylees Miller (2014). *John E. Freund's Mathematical Statistics with Applications* (8thedition). Pearson. Dorling Kindersley Pvt. Ltd. India.
3. Jim Pitman (1993). *Probability*, Springer-Verlag.
4. Sheldon M. Ross (2014). *Introduction to Probability Models* (11th edition). Elsevier.
9. A. M. Yaglom and I. M. Yaglom (1983). *Probability and Information*. D. Reidel Publishing Company. Distributed by Hindustan Publishing Corporation (India) Delhi.

M. Sc. Engineering Physics
Semester-VI
Subject: Mathematics
(Course Type-Discipline Specific Elective, Course Code: MT-603)
Nomenclature: Mathematics practical-VI
No. of Credits: 2

Max. Marks: 50
Time: 3 hrs.

Special Note: -

1. This course has two components, Problem Solving and Practical using LATEX software.
2. The examiner will set 4 questions at the time of practical examination asking two questions from the part (a) and two questions from the part (b) by taking course outcomes (COs) into consideration.
3. The examinee will be required to solve one problem from the part (a) and to execute one program successfully from the part (b). Equal weightage will be given to both the parts.
4. The evaluation will be done on the basis of practical record, viva-voce, write up and execution of the program.
5. The Practical examination will be held in a single session of 3 hours.

Distribution of Marks:

Experiment	25 marks
Viva- voce	15 marks
Lab Record	10 marks
Total	50 marks

a. **Linear Programming Problem Solving**- Questions related to the following problems will be solved using scientific calculator and record of those will be maintained in the Practical Notebook:

1) To solve a Linear Programming Problem by Simplex method with unique solution or with unbounded solution.
2) To solve a Linear Programming Problem by Two Phase method.
3) To solve a Linear Programming Problem by Big M- Method.
4) To solve a Linear Programming Problem using duality.
5) To obtain an optimal solution by Dual Simplex Method.
6) To determine optimal solution of a transportation problem using Vogel's method.
7) Determine optimal solution of transportation problem using (**u v**) method.
8) Determine an initial basic feasible solution of transportation problem by matrix method.

OR

a. **Problem Solving of Statistics and Probability-** Questions related to the following problems will be solved using scientific calculator and record of those will be maintained in the Practical Notebook:

1) Practical problems based on measures of dispersion (variance, standard deviation and coefficient of variation).
2) To compute Karl Pearson's coefficient of correlation for given bivariate frequency distribution.
3) To obtain the regression lines for given data.
4) Practical problems based on Binomial distribution.
5) Practical problems based on Poisson distribution.
6) Practical problems based on Normal distribution.
7) To fit a straight line for the given data on pairs of observations.
8) Practical problem solving related to expectation of random variables.

b) **LATEX Practicals-** Following practicals of typing documents using LATEX software will be done and records of those will be maintained in the practical notebook and the candidates will be asked by the examiner to type a document using more than one of these listed commands at the time of Semester end practical examination:

1. Create a document with mixed math and text note. Type some mathematical expressions related to limit, continuity, derivative and differential equations using suitable environment for mathematics formulas and also \begin{eqnarray} ...\end{eqnarray} and \begin{equation} ...
   \end {equation} environment.
2. Create a document to typeset arithmetic operations, subscripts, superscripts, accents, operators, binomial coefficients, congruences, delimiters and integrals.
3. Create a document to produce tables using commands:

   \begin{tabular}{…}

   l for a column of left-aligned text ,

   r for a column of right-aligned text,

   c for a column of centre-aligned text,

   | for a vertical line

   and following \begin command, table data is written by using following symbols;

& is placed between columns,

\\ is placed at the end of a row (to start a new one),

\hline inserts a horizontal line.

\cline{1-2} inserts a partial horizontal line between column 1 and column 2,

the command \end{tabular} finishes the table.

4. Create a document including figures by using following commands:

```
\usepackage{graphicx} (graphic package is used for figures)
\begin{figure}[h!]
\centering
\includegraphics[width=1\textwidth]{ImageFilename}
\caption{My test image}
\label{…}
\end{figure}
```

5. Create a document using matrix using the following commands:

```
\usepackage {amsmath}
\begin{matrix}
…
\end{matrix}
\begin{pmatrix}
…
\end{pmatrix}
\begin{bmatrix}
…
\end{bmatrix}
\begin{vmatrix}
…
\end{vmatrix}
```

6. Create a document illustrating use of \begin{abstract} ...\end{abstract}, \begin{theorem} ... \end{theorem}, and \begin{definition} ... \end{definition} formats.
7. Create a document illustrating references, citations, footnotes and hyperlinks.

3. Create a document to generate bibliography.

Course Outcomes: This course will enable the students to:

1. Attain skills to solve practical Linear Programming Problems using graphical method, simplex method and other methods.

   OR

1. Attain skills to measure a dispersion, find correlation coefficient, regression line and to fit a curve through given data points.
2. Learn tools for solving practical transportation problems using Vogel's method, (**u v**) method and matrix method.

   OR

2. Apply knowledge to solve practical problems related to Binomial, Normal and Poisson distributions.
3. Attain skills and to have hands-on experience to type a document which includes mathematical symbols, expressions and equations; tables; matrices and references using LATEX software.

M. Sc. Engineering Physics
Semester – VI
Subject: Chemistry
(Course type-Discipline Specific Elective, Course Code: CH-601(A))
Nomenclature: Applied physical Chemistry
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

Section A (15 Hrs.)

Surface Chemistry

Adsorption by solids, Chemisorption, Applications of adsorption, Adsorption of gases by solids, Factors influencing adsorption, The Freundlich adsorption isotherm, The Langmuir theory of adsorption, The BET theory of multilayer adsorption, Derivation of the BET equation, Types of adsorption isotherms, Adsorption from solution, The Gibbs adsorption isotherm.

Synthetic Dyes

Colour and constitution (electronic concept), Classification of dyes, Chemistry and synthesis of Methyl orange, Congo red, Malachite green, Crystal violet, Phenolphthalein, Fluorescein, Alizarin and Indigo.

Section B (15 Hrs.)

Liquid Crystals

The Mesomorphic State, Liquid crystals and its classification, Uses of liquid crystals. Surfactants, its types and methods to determine critical micelle concentration (Electrical conductivity and surface tension), Emulsions, Emulsifiers, Gels, Elastic and non-elastic gels.

Macromolecules

Macromolecules, Molar mass of polymers, Determination of molar masses of macromolecules, Thermodynamics of polymer solution.

Course Outcomes:

CO1: Have knowledge about concept of surface chemistry and their different aspects and applications.

CO2: Get the knowledge about synthetic dyes and their different classification

CO3: Get information about liquid crystals, their classifications and their uses

CO4: Learn about macromolecules and determination of molar masses of macromolecules

Reference Books:

- Finar, I. L. *Organic Chemistry* (*Volume 2)*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
- Berg, J.M., Tymoczko, J.L. & Stryer, L. *Biochemistry*, W.H. Freeman, 2002.
- Nelson, D. L. & Cox, M. M. *Lehninger's Principles of Bioch*emistry *7th Ed.*, W. H. Freeman.
- Biochemistry, Voet and Voet,
- Fundamentals of Biochemistry, Jain and Jain, S Chand and company
- B. R. Puri, Madan S. Pathania , L. R. Sharma*Principles of Physical Chemistry* Vishal Publications

M. Sc. Engineering Physics
Semester – VI
Subject: Chemistry
(Course type-Discipline Specific Elective, Course Code: CH-601(B))
Nomenclature: Green Chemistry, organosulphur compounds and organic polymers
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

SECTION-A (15 Hrs)

Green chemistry

What is Green Chemistry? Need for Green Chemistry. Goals of Green Chemistry.

Limitations/ Obstacles in the pursuit of the goals of Green Chemistry, Principles of Green Chemistry and Designing a Chemical synthesis, Twelve principles of Green Chemistry with their explanations and examples.

Principles of Green Chemistry and Designing a Chemical synthesis

Twelve principles of Green Chemistry with their explanations and examples and special emphasis on the following: Designing a Green Synthesis using these principles; Prevention of Waste/ byproducts; maximum incorporation of the materials used in the process into the final products , Atom Economy, calculation of atom economy of the rearrangement, addition, substitution and elimination reactions. Prevention/ minimization of hazardous/ toxic products reducing toxicity.

(Function) hazard × exposure; waste or pollution prevention hierarchy. Green solvents– water as a solvent for organic reactions, ionic liquids, PEG, solvent less processes, immobilized solvents and how to compare greenness of solvents.

SECTION-B (15 Hrs)

Organic Polymers

Addition or chain-growth polymerization. Free radical vinyl polymerization, ionic vinyl polymerization, Ziegler-Natta polymerization and vinyl polymers. Condensation or step growth polymerization.

Properties of Polymers (Physical, thermal, Flow & Mechanical Properties). Brief introduction to preparation, structure, properties and application of the following polymers: polyolefins, polystyrene and styrene copolymers, poly(vinyl chloride) and related polymers, poly(vinyl acetate) and related polymers, acrylic polymers, fluoro polymers, polyamides and related polymers. Phenol formaldehyde resins (Bakelite, Novalac), polyurethanes, silicone polymers, polydienes, Polycarbonates, Conducting Polymers, [polyacetylene, polyaniline, poly(p-phenylene sulphide polypyrrole, polythiophene)].

Course Outcomes:

CO1: Know about the principle of green chemistry

CO2: To apply the knowledge of green chemistry

CO3: to know about basics of organic polymers and their applications

Reference Books:

- Ahluwalia, V.K. & Kidwai, M.R. New Trends in Green Chemistry, Anamalaya Publishers (2005). Anastas, P.T. & Warner, J.K.: Green Chemistry - Theory and Practical, Oxford University Press (1998).
- Matlack, A.S. Introduction to Green Chemistry, Marcel Dekker (2001).
- Cann, M.C. & Connely, M.E. Real-World cases in Green Chemistry, American Chemical Society, Washington (2000).
- Ryan, M.A.& Tinnesand, M. Introduction to Green Chemistry, American Chemical Society, Washington (2002).
- Lancaster, M. Green Chemistry: An Introductory Text RSC Publishing, 2nd Edition, 2010.

M. Sc. Engineering Physics
Semester – VI
Subject: Chemistry
(Course type-Discipline Specific Elective, Course Code: CH-602(A))
Nomenclature: Analytical chemistry
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

SECTION A (15hrs.)

Analytical chemistry

Introduction to Analytical Chemistry and its interdisciplinary nature.Concept of sampling. Importance of accuracy, precision and sources of error in analytical measurements. Presentation of experimental data and results, from the point of view of significant figures.

Analysis of soil, water and food products

Composition of soil, Concept of pH and pH measurement, Complexometric titrations, Chelation, Chelating agents, use of indicators

a. Determination of pH of soil samples.

b. Estimation of Calcium and Magnesium ions as Calcium carbonate by complexometric titration.

Analysis of water: Definition of pure water, sources responsible for contaminating water, water sampling methods, water purification methods.

a. Determination of pH, acidity and alkalinity of a water sample.

b. Determination of dissolved oxygen (DO) of a water sample.

SECTION B (15hrs.)

Analysis of food products: Nutritional value of foods, idea about food processing and food preservatives and adulteration.

a. Identification of adulterants in some common food items like coffee powder, asafoetida, chilli powder, turmeric powder, coriander powder and pulses, etc.

b. Analysis of preservatives and colouring matter.

Analysis of cosmetics

Major and minor constituents and their function

a. Analysis of deodorants and antiperspirants, Al, Zn, boric acid, chloride, sulphate.

b. Determination of constituents of talcum powder: Magnesium oxide, Calcium oxide, Zinc oxide and Calcium carbonate by complexometric titration.

Chromatography

Definition, general introduction on principles of chromatography, paper chromatography, TLC etc.

a. Paper chromatographic separation of mixture of metal ion (Fe^{3+} and Al^{3+}).

b. To compare paint samples by TLC method.

Ion-exchange: Column, ion-exchange chromatography etc.

Determination of ion exchange capacity of anion /cation exchange resin (using batch procedure if use of column is not feasible).

Course Outcomes:

CO1: To know about basics of analytical chemistry

CO2: Aware about analysis of soils, water, cosmetics and food products

CO3: To explain definition and principle of chromatography

CO4: Have idea about analysis of cosmetics

CO5: To know about principles and various types of chromatography techniques

Reference Books:

- Willard, H.H., Merritt, L.L., Dean, J. & Settle, F.A. *Instrumental Methods of Analysis*. 7th Ed. Wadsworth Publishing Co. Ltd., Belmont, California, USA, 1988.
- Skoog, D.A. Holler F.J. &Nieman, T.A. *Principles of Instrumental Analysis*, Cengage Learning India Ed.
- Skoog, D.A.; West, D.M. & Holler, F.J. *Fundamentals of Analytical Chemistry 6th Ed.*, Saunders College Publishing, Fort Worth (1992).
- Harris, D. C. *Quantitative Chemical Analysis*, W. H. Freeman.
- Dean, J. A. *Analytical Chemistry Notebook*, McGraw Hill.

M. Sc. Engineering Physics
Semester – VI
Subject: Chemistry
(Course type-Discipline Specific Elective, Course Code: CH-602(B))
Nomenclature: Nuclear chemistry, organosulphur compounds and catalysis
No. of Credits: 2

Max. Marks: 50
Theory: 40
Internal Assessment: 10
Time: 3 hrs.

Note:-

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no.1 carry 8 marks and all questions in Section A & B (not more than 2-3 parts) carry 8 marks each**.**

SECTION A (15hrs.)

Nuclear chemistry

Radioactivity, Rays from radioactive materials, radioactive disintegration, half-life period, radioactive equilibrium. Steady state, Theory of radioactivity, Carbon dating,

Nuclear fission, Calculation of energy released in nuclear fission, the fission chain reaction, The concept of critical mass, Nuclear fusion, Nuclear reactions, Radiation chemistry, Radiolysis of water, Nuclear reactor.

Radioactive isotopes, radiochemical principle in the use of tracers, applications of tracers in chemical investigations, physiochemical methods, analytical applications, age determinations, medical applications, agricultural applications.

SECTION B (15hrs.)

Organosulfur Compounds

Nomenclature, structural features, Methods of formation and chemical reactions of thiols,trioethers, sulphonic acids, sulphonamides and sulphaguanidine.

Catalysis

General characteristics of catalytic reactions, Acid-base catalysis, Enzyme catalysis, Michaelis-Menten equation, Effect of temperature on enzyme catalysis, Heterogeneous catalysis, Surface reactions, Kinetics of surface reactions, Unimolecular surface reactions, Bimolecular surface reactions, Effect of temperature on surface reactions, Autocatalysis and Oscillatory reactions.

Course Outcomes:

CO1: To know the basic concepts of nuclear chemistry and various processes occurs during the nuclear reactions

CO2: Have knowledge about basic of catalysis and their related aspects.

CO3: to know about the types of organosulphur compounds and their studies

Reference Books:

- Willard, H.H., Merritt, L.L., Dean, J. & Settle, F.A. *Instrumental Methods of Analysis*. 7th Ed. Wadsworth Publishing Co. Ltd., Belmont, California, USA, 1988.
- Skoog, D.A. Holler F.J. & Nieman, T.A. *Principles of Instrumental Analysis*, Cengage Learning India Ed.
- Skoog, D.A.; West, D.M. & Holler, F.J. *Fundamentals of Analytical Chemistry 6th Ed.*, Saunders College Publishing, Fort Worth (1992).
- Harris, D. C. *Quantitative Chemical Analysis*, W. H. Freeman.
- Dean, J. A. *Analytical Chemistry Notebook*, McGraw Hill.

M. Sc. Engineering Physics
Semester-VI
Subject: Chemistry
(Course type-Discipline Specific Elective, Course Code: CH-603(A))
Nomenclature: Chemistry practical-VI
Credits: 2

Max. Marks: 50
Time: 6hrs.

Special Note: -

The Practical examination will be held in two sessions of 3 hours each & the students are required to perform two experiments during the examination.

Distribution of Marks:

Experiment	15+15 marks
Viva- voce	5+5 marks
Lab Record	10 marks
Total	50 marks

1. To determine the strength of the given acid solution (mono acid only) conductometrically.

2. To determine the solubility and solubility product of a lead sulphate conductometrically.

3. To determine the strength of a given Mohr's salt solution potentiometrically.

4. To determine the molecular weight of a non-volatile solute by Rast method.

5. Preparation of acidic and basic buffers and comparison of their pH with theoretical values.

6. To determine the specific rotation of an optically active substance (any two).

7. To separate the binary liquid mixtures using distillation.

8. Determination of total reducing sugar (before inversion and after inversion).

9. Synthesis of the following organic compounds:

(a) To prepare salicylic acid from Aspirin.

(b) To prepare p-bromoaniline from p-bromoacetanilide.
(c) To prepare soap from vegetable oil.

Course Outcomes:

CO1: To perform conductometric titrations to find out strength of monobasic acid and also solubility and solubility product of a sparingly soluble salt

CO2: Able to conduct the potentiometric titrations

CO3: Can separate the binary liquid mixture using distillation

CO4: Able to synthesize various organic compounds & soap in the lab

M. Sc. Engineering Physics
Semester-VI
Subject: Chemistry
(Course type-Discipline Specific Elective, Course Code: CH-603(B))
Nomenclature: Chemistry practical-VI
Credits: 2

Max. Marks: 50
Time: 6hrs.

Special Note: -

The Practical examination will be held in two sessions of 3 hours each & the students are required to perform two experiments during the examination.

Distribution of Marks:

Experiment	15+15 marks
Viva- voce	5+5 marks
Lab Record	10 marks
Total	50 marks

1. To determine the strength of the given acid solution (mono acid only) conductometrically.

2. To determine the solubility and solubility product of a barium sulphate conductometrically.

3. To determine the strength of a given Ferrous ammonium sulphate solution potentiometrically.

4. To determine the molecular weight of a non-volatile solute by Rast method.

5. Preparation of acidic and basic buffers and comparison of their pH with theoretical values.

6. To determine the specific rotation of an optically active substance (any two).

7. Determination of Fructose/glucose ratio in honey sample.

8. Quantitation of protein (Casein) in milk/butter.

9. Synthesis of the following organic compounds:

(a) To prepare m-nitroaniline from m-dinitrobenzene.

(b) To prepare S-Benzyl-iso-thiouronium chloride from Thiourea.

Course Outcomes:

CO1: To perform conductometric titrations to find out strength of monobasic acid and also solubility and solubility product of a sparingly soluble salt

CO2: Able to conduct the potentiometric titrations

CO3: Can separate the binary liquid mixture using distillation

CO4: Able to synthesize various organic compounds in the lab

KURUKSHETRA UNIVERSITY KURUKSHETRA

POs & PSOs
(1st to 6th semester)

for

Five Years Integrated
M. Sc. Engineering Physics (3 Years BSc+2Years M.Sc.)
Under CBCS-LOCF
(Effective from the Academic Session 2020-21 in phase manner)

Department of Physics
INSTITUTE OF INTEGRATED & HONORS STUDIES
Kurukshetra University
Kurukshetra - 136 119
Haryana (INDIA)

Program Outcomes (PO) for Under Graduate Programme (1st to 6th semesters of M.Sc. Engineering Physics: Degree to be awarded- B. Sc. -Engineering Physics), Institute of Integrated & Honors Studies, KUK:

PO1	Knowledge	Capable of demonstrating comprehensive disciplinary knowledge gained during course of study
PO2	Communication	Ability to communicate effectively on general and scientific topics with the scientific community and with society at large
PO3	Problem Solving	Capability of applying knowledge to solve scientific and other problems
PO4	Individual and Team Work	Capable to learn and work effectively as an individual , and as a member or leader in diverse teams, multidisciplinary settings
PO5	Investigation of Problems	Ability of critical thinking, analytical reasoning and research based knowledge including design of experiments, analysis and interpretation of data to provide conclusions
PO6	Modern Tool usage	Ability to use and learn techniques, skills and modern tools for scientific practices
PO7	Science and Society	Ability to apply reasoning to assess the different issues related to society and the consequent responsibilities relevant to the professional scientific practices
PO8	Life-Long Learning	Aptitude to apply knowledge and skills that are necessary for participating in learning activities throughout life
PO9	Environment and Sustainability	Ability to design and develop modern systems which are environmentally sensitive and to understand the importance of sustainable development
PO10	Ethics	Apply ethical principles and professional responsibilities in scientific practices
PO11	Project Management	Ability to demonstrate knowledge and understanding of the scientific principles and apply these to manage projects

Programme specific outcomes (Physics: For Five Yrs. Integrated MSc. Engineering Physics – 1st to 6th semesters)

After successful completion programme, the students will be able to:

PSO1: Acquire an in-depth understanding and knowledge of the basic concepts of physics and be able to appreciate how diverse phenomena observed in nature follow from a small set of fundamental laws through logical reasoning.

PSO2: Be capable of understanding the core physical laws to understand the basic concepts, latest progress and applications of certain sub fields such as nuclear physics, spectroscopy of atoms & molecules, solid state physics, computational physics & electronics.

PSO3: Gain hands-on skills for carrying out basic experiments as well as experiments related to different fields of Physics and attain abilities of critical thinking, problem mapping & solving using fundamental principles of Physics, systematic analysis & interpretation of results.

PSO4: Have a new perspective to look at everything from 'Scientific' point of view that enabling them to pursue higher studies at postgraduate & research level

PSO5: Have awareness of the impact of Physics in social, Economical and environmental issues.

Mapping of CO with PO's and PSO's

Course code EP-101																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-101.1	3	3	3	2	2	2	2	3	2	-	2	3	3	3	3	2
EP-101.2	3	3	3	2	3	2	2	3	2	-	2	3	3	3	3	2
EP-101.3	3	3	3	2	3	2	2	3	2	-	2	3	3	3	3	1
EP-101.4	3	3	2	2	2	1	2	2	1	-	2	3	3	3	3	1
Average	3	3	2.75	2	2.5	1.75	2	2.75	1.75	-	2	3	3	3	3	1.5
Note: 3-Strong, 2-Medium, 1-Weak																

Course code: EP-102																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-102.1	3	3	3	2	2	2	2	3	2	-	2	3	3	2	2	2
EP-102.2	3	3	3	3	3	2	2	2	2	-	2	3	3	2	3	2
EP-102.3	3	3	2	2	2	2	2	2	2	-	2	3	3	2	3	2
EP-102.4	3	3	2	2	2	2	2	3	2	-	1	3	3	2	2	2
Average	3	3	2.5	2.25	2.25	2	2	2.5	2	-	1.75	3	3	2	2.5	2

Course code:EP-103																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-103.1	3	3	3	3	2	2	2	3	2	-	2	3	3	3	3	3
EP-103.2	3	3	3	3	2	3	2	3	2	-	2	3	3	2	3	3
EP-103.3	3	3	3	3	2	3	2	2	2	-	2	3	3	3	3	3
EP-103.4	3	3	3	3	3	3	2	3	2	-	3	3	3	3	3	3
Average	3	3	3	3	2.75	2.75	2	2.75	2	-	2.75	3	3	2.75	3	3

Semester-II

Course code EP-201																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-201.1	3	3	3	2	2	2	3	2	2	-	3	3	3	2	3	2
EP-201.2	3	3	3	2	2	2	2	3	2	-	2	3	3	2	3	2
EP-201.3	3	3	3	2	2	2	2	2	2	-	2	3	2	2	2	2
EP-201.4	3	3	3	2	2	2	3	2	2	-	3	3	2	2	2	2
Average	3	3	3	2	2	2	2.5	2.75	2	-	2.5	3	2.5	2	2.5	2
Note: 3-Strong, 2-Medium, 1-Weak																

Course code: EP-202																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-202.1	3	3	3	3	3	2	2	3	2	-	2	3	3	2	3	2
EP-202.2	3	3	3	3	2	2	2	2	2	-	2	3	2	2	3	2
EP-202.3	3	3	2	2	2	2	2	3	2	-	2	2	2	2	2	2
EP-202.4	3	3	2	2	2	2	2	2	2	-	2	2	2	2	3	2
Average	3	3	2.5	2.5	2.75	2	2	2.5	2	-	2	2.5	2.25	2	2.5	2

Course code:EP-203																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-203.1	3	3	2	3	3	2	2	3	2	-	2	3	2	2	3	2
EP-203.2	3	3	3	2	2	2	2	2	2	-	2	3	2	2	3	2
EP-203.3	3	3	2	2	2	2	2	3	2	-	2	2	2	2	2	2
EP-203.4	3	3	3	3	2	2	2	2	2	-	2	2	2	2	3	2
Average	3	3	2.5	2.5	2.75	2	2	2.5	2	-	2	2.5	2	2	2.5	2

Mapping of CO with PO's and PSO's
Semester-III

Course code EP-301																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-301.1	3	3	2	2	2	2	2	3	2	-	2	3	2	2	3	2
EP-301.2	3	3	2	2	2	2	2	2	2	-	2	3	2	2	3	2
EP-301.3	3	3	2	2	2	2	2	3	2	-	2	2	2	2	2	2
EP-301.4	3	3	2	2	2	2	2	2	2	-	2	2	2	2	3	2
Average	3	3	2	2	2	2	2	2.5	2	-	2	2.5	2	2	2.5	2
Note: 3-Strong, 2-Medium, 1-Weak																

Course code: EP-302																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-302.1	3	3	3	3	3	1	2	2	2	-	2	3	2	2	3	2
EP-302.2	3	3	3	3	2	1	2	2	2	-	2	3	2	2	3	2
EP-302.3	3	3	2	2	2	2	2	3	2	-	2	2	2	2	2	2
EP-302.4	3	3	2	2	2	1	2	2	2	-	2	2	2	2	3	2
Average	3	3	2.5	2.5	2.75	1.25	2	2	2	-	2	2.5	2	2	2.5	2

Course code:EP-303																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-303.1	3	3	2	3	3	2	2	3	2	-	2	3	2	2	3	2
EP-303.2	3	3	3	2	2	2	2	2	2	-	2	3	2	2	3	2
EP-303.3	3	3	2	2	2	2	2	3	2	-	2	2	2	2	2	2
EP-303.4	3	3	3	3	2	2	2	2	2	-	2	2	2	2	3	2
Average	3	3	2.5	2.5	2.75	2	2	2.5	2	-	2	2.5	2	2	2.5	2

Mapping of CO with PO's and PSO's

Semester-IV

Course code EP-401																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-401.1	3	3	2	3	2	2	2	2	2	-	2	3	2	2	3	2
EP-401.2	3	3	2	2	2	2	2	2	2	-	2	3	2	2	3	2
EP-401.3	3	3	2	2	2	2	2	2	2	-	2	2	2	2	2	2
EP-401.4	3	3	3	3	2	2	2	2	2	-	2	2	2	2	2	2
Average	3	3	2.25	2.5	2	2	2	2	2	-	2	2.5	2	2	2.5	2
Note: 3-Strong, 2-Medium, 1-Weak																

Course code: EP-402

COs	PO1- Knowledge	PO2- Communication	PO3- Problem Solving	PO4- Individual and Team Work	PO5- Investigation of Problems	PO6- Modern Tool usage	PO7- Science and Society	PO8- Life-Long Learning	PO9- Environment and Sustainability	PO10- Ethics	PO11- Project Management	PSO1	PSO2	PSO3	PSO4	PSO5
EP-402.1	3	3	2	2	2	2	2	2	2	-	2	3	2	2	2	2
EP-402.2	3	3	2	2	2	2	2	2	2	-	2	3	3	2	3	2
EP-402.3	3	3	3	2	2	2	2	2	2	-	2	3	3	2	2	2
EP-402.4	3	3	3	3	2	2	2	2	2	-	2	3	3	2	2	2
Average	3	3	2.5	2.25	2	2	2	2	2	-	2	3	2.75	2	2.25	2

Course code:EP-403

COs	PO1- Knowledge	PO2- Communication	PO3- Problem Solving	PO4- Individual and Team Work	PO5- Investigation of Problems	PO6- Modern Tool usage	PO7- Science and Society	PO8- Life-Long Learning	PO9- Environment and Sustainability	PO10- Ethics	PO11- Project Management	PSO1	PSO2	PSO3	PSO4	PSO5
EP-403.1	3	3	2	3	3	2	2	3	2	-	2	3	2	2	3	2
EP-403.2	3	3	3	2	2	2	2	2	2	-	2	3	2	2	3	2
EP-403.3	3	3	2	2	2	2	2	3	2	-	2	2	2	2	2	2
EP-403.4	3	3	3	3	2	2	2	2	2	-	2	2	2	2	3	2
Average	3	3	2.5	2.5	2.75	2	2	2.5	2	-	2	2.5	2	2	2.5	2

Course code:SEC-401A																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
SEC-401A.1	2	2	2	3	2	2	2	2	2	-	2	2	2	2	2	2
SEC-401A.2	3	3	2	2	2	2	2	2	2	-	2	3	2	2	3	2
SEC-401A.3	3	3	3	2	2	2	2	2	2	-	2	3	2	2	2	2
SEC-401A.4	2	2	2	3	2	2	2	2	2	-	2	2	2	2	2	2
Average	2.5	2.5	2.25	2.5	2	2	2	2	2	-	2	2.5	2	2	2.25	2

Course code: SEC-401B																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
SEC-401B.1	2	2	2	3	2	2	2	2	3	-	2	2	2	2	2	2
SEC-401B.2	3	2	2	2	2	2	2	2	3	-	2	3	2	2	2	2
SEC-401B.3	2	2	2	2	2	2	2	2	2	-	2	2	2	2	2	2
SEC-401B.4	2	2	2	3	2	2	2	2	2	-	2	2	2	2	2	2
Average	2.25	2	2	2.5	2	2	2	2	2.5	-	2	2	2	2	2	2

Mapping of CO with PO's and PSO's

Semester-V

Course code EP-501A																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-501A.1	3	3	3	2	2	2	2	3	2	-	2	3	2	2	2	2
EP-501A.2	3	3	2	2	2	2	2	2	2	-	2	3	2	2	2	2
EP-501A.3	3	3	2	2	2	2	2	2	2	-	2	3	2	2	3	2
EP-501A.4	3	3	3	2	2	2	2	3	2	-	2	3	3	2	3	2
Average	3	3	2.5	2	2	2	2	2.5	2	-	2	3	2.75	2	2.5	2
Note: 3-Strong, 2-Medium, 1-Weak																

Course code: EP-501B																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-501B.1	3	3	3	2	2	2	2	3	2	-	2	3	3	2	2	2
EP-501B.2	3	3	3	2	2	2	2	2	2	-	2	3	3	2	2	2
EP-501B.3	3	3	3	2	2	2	2	2	2	-	2	3	3	2	3	2
EP-501B.4	3	3	3	2	2	2	2	3	2	-	2	3	3	2	3	2
Average	3	3	3	2	2	2	2	2.5	2	-	2	3	3	2	2.5	2

Course code EP-502A																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-502A.1	3	3	2	2	2	2	2	2	2	-	2	3	3	2	2	2
EP-502A.2	3	3	2	2	2	2	2	2	2	-	2	3	3	2	2	2
EP-502A.3	3	3	2	2	2	2	2	2	2	-	2	3	3	2	3	2
EP-502A.4	3	3	2	2	2	2	2	2	2	-	2	3	3	2	3	2
Average	3	3	2	2	2	2	2	2	2	-	2	3	3	2	2.5	2
Note: 3-Strong, 2-Medium, 1-Weak																

Course code: EP-502B																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-502B.1	3	3	2	2	2	2	2	3	2	-	2	3	2	2	2	2
EP-502B.2	3	3	2	2	2	2	2	2	2	-	2	3	2	2	2	2
EP-502B.3	3	3	2	2	2	2	2	2	2	-	2	3	2	2	3	2
EP-502B.4	3	3	2	2	2	2	2	3	2	-	2	3	2	2	3	2
Average	3	3	2	2	2	2	2	2.5	2	-	2	3	2	2	2.5	2

Course code EP-503A																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-503A.1	3	3	2	3	3	2	2	3	2	-	2	3	2	2	3	2
EP-503A.2	3	3	3	2	2	2	2	2	2	-	2	3	2	2	3	2
EP-503A.3	3	3	2	2	2	2	2	3	2	-	2	2	2	2	2	2
EP-503A.4	3	3	3	3	2	2	2	2	2	-	2	2	2	2	3	2
Average	3	3	2.5	2.5	2.75	2	2	2.5	2	-	2	2.5	2	2	2.5	2
Note: 3-Strong, 2-Medium, 1-Weak																

Course code: EP-503B																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-503B.1	3	3	2	3	3	2	2	3	2	-	2	3	2	2	3	2
EP-503B.2	3	3	3	2	2	2	2	2	2	-	2	3	2	2	3	2
EP-503B.3	3	3	2	2	2	2	2	3	2	-	2	2	2	2	2	2
EP-503B.4	3	3	3	3	2	2	2	2	2	-	2	2	2	2	3	2
Average	3	3	2.5	2.5	2.75	2	2	2.5	2	-	2	2.5	2	2	2.5	2

Mapping of CO with PO's and PSO's
Semester-VI

Course code EP-601A																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-601A.1	3	3	2	2	2	2	2	2	2	-	2	3	2	2	2	2
EP-601A.2	3	3	3	3	2	2	2	3	2	-	2	3	3	2	3	2
EP-601A.3	3	3	3	3	2	2	2	3	2	-	2	3	3	3	3	2
EP-601A.4	3	3	2	2	2	2	2	2	2	-	2	3	2	2	2	2
Average	3	3	2.5	2.5	2	2	2	2.5	2	-	2	3	2.5	2.25	2.5	2
Note: 3-Strong, 2-Medium, 1-Weak																

Course code: EP-601B

COs	PO1- Knowledge	PO2- Communication	PO3- Problem Solving	PO4- Individual and Team Work	PO5- Investigation of Problems	PO6- Modern Tool usage	PO7- Science and Society	PO8- Life-Long Learning	PO9- Environment and Sustainability	PO10- Ethics	PO11- Project Management	PSO1	PSO2	PSO3	PSO4	PSO5
EP-601B.1	3	3	2	2	2	2	2	2	2	-	2	3	3	2	2	2
EP-601B.2	3	3	2	2	2	2	2	2	2	-	2	3	3	2	2	2
EP-601B.3	3	3	3	3	2	2	2	3	2	-	2	3	3	2	3	2
EP-601B.4	3	3	3	3	2	2	2	3	2	-	2	3	3	2	3	2
Average	3	3	2.5	2.5	2	2	2	2.5	2	-	2	3	3	2	2.5	2

Course code EP-602A

COs	PO1- Knowledge	PO2- Communication	PO3- Problem Solving	PO4- Individual and Team Work	PO5- Investigation of Problems	PO6- Modern Tool usage	PO7- Science and Society	PO8- Life-Long Learning	PO9- Environment and Sustainability	PO10- Ethics	PO11- Project Management	PSO1	PSO2	PSO3	PSO4	PSO5
EP-602A.1	3	3	3	3	2	2	2	3	2	-	2	3	3	3	3	2
EP-602A.2	3	3	3	3	2	2	2	3	2	-	2	3	3	3	3	2
EP-602A.3	3	3	3	3	2	2	2	3	2	-	2	3	3	3	2	2
EP-602A.4	3	3	3	2	2	2	2	2	2	-	2	3	3	2	2	2
Average	3	3	3	2.75	2	2	2	2.75	2	-	2	3	3	2.75	2.5	2
Note: 3-Strong, 2-Medium, 1-Weak																

Course code: EP-602B																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-602B.1	3	3	2	2	2	2	2	2	2	-	2	3	2	2	2	2
EP-602B.2	3	3	2	2	2	2	2	2	2	-	2	3	2	2	3	2
EP-602B.3	3	3	2	2	2	2	2	2	2	-	2	3	2	3	3	2
EP-602B.4	3	3	2	2	2	2	2	2	2	-	2	3	2	3	3	2
Average	3	3	2	2	2	2	2	2	2	-	2	3	2	2.5	2.75	2

Course code EP-603A																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-603A.1	3	3	2	3	3	2	2	3	2	-	2	3	2	2	3	2
EP-603A.2	3	3	3	2	2	2	2	2	2	-	2	3	2	2	3	2
EP-603A.3	3	3	2	2	2	2	2	3	2	-	2	2	2	2	2	2
EP-603A.4	3	3	3	3	2	2	2	2	2	-	2	2	2	2	3	2
Average	3	3	2.5	2.5	2.75	2	2	2.5	2	-	2	2.5	2	2	2.5	2
Note: 3-Strong, 2-Medium, 1-Weak																

Course code: EP-603B																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-603B.1	3	3	2	3	3	2	2	3	2	-	2	3	2	2	3	2
EP-603B.2	3	3	3	2	2	2	2	2	2	-	2	3	2	2	3	2
EP-603B.3	3	3	2	2	2	2	2	3	2	-	2	2	2	2	2	2
EP-603B.4	3	3	3	3	2	2	2	2	2	-	2	2	2	2	3	2
Average	3	3	2.5	2.5	2.75	2	2	2.5	2	-	2	2.5	2	2	2.5	2

Mapping of Courses with PO's and PSO's for core and elective courses (Physics: For Five Yrs. Integrated MSc. Engineering Physics – 1st to 6th semesters)																
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
EP-101	3	3	2.75	2	2.5	1.75	2	2.75	1.75	-	2	3	3	3	3	1.5
EP-102	3	3	2.5	2.25	2.25	2	2	2.5	2	-	1.75	3	3	2	2.5	2
EP-103	3	3	3	3	2.75	2.75	2	2.75	2	-	2.75	3	3	2.75	3	3
EP-201	3	3	3	2	2	2	2.5	2.75	2	-	2.5	3	2.5	2	2.5	2
EP-202	3	3	2.5	2.5	2.75	2	2	2.5	2	-	2	2.5	2.25	2	2.5	2
EP-203	3	3	2.5	2.5	2.75	2	2	2.5	2	-	2	2.5	2	2	2.5	2
EP-301	3	3	2	2	2	2	2	2.5	2	-	2	2.5	2	2	2.5	2
EP-302	3	3	2.5	2.5	2.75	1.25	2	2	2	-	2	2.5	2	2	2.5	2
EP-303	3	3	2.5	2.5	2.75	2	2	2.5	2	-	2	2.5	2	2	2.5	2
EP-401	3	3	2.25	2.5	2	2	2	2	2	-	2	2.5	2	2	2.5	2
EP-402	3	3	2.5	2.25	2	2	2	2	2	-	2	3	2.75	2	2.25	2
EP-403	3	3	2.5	2.5	2.75	2	2	2.5	2	-	2	2.5	2	2	2.5	2
SEC-401A	2.5	2.5	2.25	2.5	2	2	2	2	2	-	2	2.5	2	2	2.25	2
SEC-401B	2.25	2	2	2.5	2	2	2	2	2.5	-	2	2	2	2	2	2

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COs	PO1- Knowledge	PO2- Communication	PO3- Problem Solving	PO4- Individual and Team Work	PO5- Investigation of Problems	PO6- Modern Tool usage	PO7- Science and Society	PO8- Life-Long Learning	PO9- Environment and Sustainability	PO10- Ethics	PO11- Project Management	PSO1	PSO2	PSO3	PSO4	PSO5
EP-501A	3	3	2.5	2	2	2	2	2.5	2	-	2	3	2.75	2	2.5	2
EP-501B	3	3	3	2	2	2	2	2.5	2	-	2	3	3	2	2.5	2
EP-502A	3	3	2	2	2	2	2	2	2	-	2	3	3	2	2.5	2
EP-502B	3	3	2	2	2	2	2	2.5	2	-	2	3	2	2	2.5	2
EP-503A	3	3	2.5	2.5	2.75	2	2	2.5	2	-	2	2.5	2	2	2.5	2
EP-503B	3	3	2.5	2.5	2.75	2	2	2.5	2	-	2	2.5	2	2	2.5	2
EP-601A	3	3	2.5	2.5	2	2	2	2.5	2	-	2	3	2.5	2.25	2.5	2
EP-601B	3	3	2.5	2.5	2	2	2	2.5	2	-	2	3	3	2	2.5	2
EP-602A	3	3	3	2.75	2	2	2	2.75	2	-	2	3	3	2.75	2.5	2
EP-602B	3	3	2	2	2	2	2	2	2	-	2	3	2	2.5	2.75	2
EP-603A	3	3	2.5	2.5	2.75	2	2	2.5	2	-	2	2.5	2	2	2.5	2
EP-603B	3	3	2.5	2.5	2.75	2	2	2.5	2	-	2	2.5	2	2	2.5	2

Note: 3-Strong, 2-Medium, 1-Weak

Programme specific outcomes (Chemistry: For five Yrs. Integrated MSc. Engineering Physics – 1st to 6th semesters)

PSO1 Acquire good knowledge about the fundamentals and applications of chemical and scientific theories.

PSO2 All branches of Science and Technology are related to Chemistry.

PSO3 Easily assess the properties of all elements discovered.

PSO4 Will become familiar with the different branches of chemistry like analytical, physical, organic, inorganic, environmental and polymer.

PSO5 Will help in understanding the causes of environmental pollution and can open up new methods to control environmental pollution.

PSO6 Will develop analytical skills and problem-solving skills requiring application of chemical principles.

PSO7 Have the ability to synthesize, separate and characterize compounds using laboratory and instrumentation techniques.

Mapping of CO with PO's and PSO's
Semester-I

Course code CH-101																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-101.1	3	3	3	3	3	2	2	3	3	3	3	3	3	3	3	2	3	3
CH-101.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3
CH-101.3	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3	2	3	3
CH-101.4	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3	2	3	3
CH-101.5	3	3	3	3	3	3	2	3	2	3	3	3	3	3	3	2	3	3
CH-101.6	3	3	3	3	3	3	3	3	2	2	3	3	3	3	3	2	3	3
CH-101.7	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3	2	3	3
CH-101.8	3	3	3	3	3	2	2	3	3	3	3	3	3	3	3	2	3	3
Average	3	3	3	3	3	2.38	2.75	3	2.38	2.88	3	3	3	3	3	2	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-102																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-102.1	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3	2	3	3
CH-102.2	3	3	3	3	3	3	2	3	2	3	3	3	3	3	3	2	3	3
CH-102.3	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3	2	3	3
CH-102.4	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3	2	3	3
CH-102.5	3	3	3	3	3	3	2	3	2	3	3	3	3	3	3	2	3	3
CH-102.6	3	3	3	3	3	3	2	3	2	2	3	3	3	3	3	2	3	3
Average	3	3	3	3	3	2.5	2	3	2	2.83	3	3	3	3	3	2	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-103																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-103.1	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
CH-103.2	3	3	3	2	3	3	1	3	1	1	3	3	3	3	3	2	3	3
CH-103.3	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
CH-103.4	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
Average	3	3	3	2	3	2.25	1	3	1	1	3	3	3	3	3	2	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-104																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-104.1	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
CH-104.2	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
CH-104.3	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
CH-104.4	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
Average	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Mapping of CO with PO's and PSO's
Semester-II

Course code CH-201																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-201.1	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	2	3	3
CH-201.2	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3	2	3	3
CH-201.3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	2	3	3
CH-201.4	3	3	3	3	3	2	3	3	2	3	3	3	3	3	3	2	3	3
CH-201.5	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3	2	3	3
CH-201.6	3	3	3	3	3	2	3	3	2	2	3	3	3	3	3	2	3	3
CH-201.7	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3	2	3	3
CH-201.8	3	3	3	3	3	2	2	2	3	3	3	3	3	3	3	2	3	3
Average	3	3	3	3	3	2.25	2	2.88	2.38	2.88	3	3	3	3	3	2	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-202																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-202.1	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3	2	3	3
CH-202.2	3	3	3	3	3	3	2	3	2	3	3	3	3	3	3	2	3	3
CH-202.3	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3	2	3	3
CH-202.4	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3	2	3	3
Average	3	3	3	3	3	2.25	2	3	2	3	3	3	3	3	3	2	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-203																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-203.1	3	3	3	2	3	2	1	2	1	1	3	3	3	3	3	2	3	3
CH-203.2	3	3	3	2	3	2	1	2	1	1	3	3	3	3	3	2	3	3
CH-203.3	3	3	3	2	3	2	1	2	1	1	3	3	3	3	3	2	3	3
CH-203.4	3	3	3	2	3	2	1	2	1	1	3	3	3	3	3	2	3	3
Average	3	3	3	2	3	2	1	2	1	1	3	3	3	3	3	2	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-204																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-204.1	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
CH-204.2	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
CH-204.3	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
CH-204.4	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
Average	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Mapping of CO with PO's and PSO's
Semester-III

Course code CH-301																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-301.1	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	2	3	3
CH-301.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3
CH-301.3	3	3	3	3	3	2	2	3	3	3	3	3	3	3	3	2	3	3
CH-301.4	3	3	3	3	3	2	2	3	3	3	3	3	3	3	3	2	3	3
CH-301.5	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3	2	3	3
CH-301.6	3	3	3	3	3	2	3	3	3	2	3	3	3	3	3	2	3	3
CH-301.7	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3	2	3	3
Average	3	3	3	3	3	2.29	2.29	3	2.72	3	3	3	3	3	3	2	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-302																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-302.1	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3	2	3	3
CH-302.2	3	3	3	3	3	3	2	3	2	3	3	3	3	3	3	2	3	3
CH-302.3	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3	2	3	3
CH-302.4	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3	2	3	3
Average	3	3	3	3	3	2.25	2	3	3	3	3	3	3	3	3	2	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-303																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-303.1	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
CH-303.2	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
CH-303.3	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
CH-303.4	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
CH-303.5	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
CH-303.6	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
Average	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-304																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-304.1	3	3	3	3	3	3	1	3	2	2	3	3	3	2	3	3	3	3
CH-304.2	3	3	3	3	3	3	1	3	2	2	3	3	3	2	3	3	3	3
CH-304.3	3	3	3	3	3	3	1	3	2	2	3	3	3	2	3	3	3	3
CH-304.4	3	3	3	3	3	3	1	3	2	2	3	3	3	2	3	3	3	3
CH-304.5	3	3	3	3	3	3	1	3	2	2	3	3	3	2	3	3	3	3
Average	3	3	3	3	3	3	1	3	2	2	3	3	3	2	3	3	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Mapping of CO with PO's and PSO's
Semester-IV

Course code CH-401																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-401.1	3	3	3	3	3	2	2	3	3	3	3	3	3	3	3	2	3	3
CH-401.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3
CH-401.3	3	3	3	3	3	3	2	3	2	3	3	3	3	3	3	2	3	3
CH-401.4	3	3	3	3	3	3	2	3	2	3	3	3	3	3	3	2	3	3
CH-401.5	3	3	3	3	3	3	2	1	2	3	3	3	3	3	3	2	3	3
CH-401.6	3	3	3	3	3	3	3	1	2	2	3	3	3	3	3	2	3	3
Average	3	3	3	3	3	2.83	2.33	2.33	2.33	2.83	3	3	3	3	3	2	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-402																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-402.1	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3	2	3	3
CH-402.2	3	3	3	3	3	3	2	3	2	3	3	3	3	3	3	2	3	3
CH-402.3	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3	2	3	3
CH-402.4	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3	2	3	3
Average	3	3	3	3	3	2.25	2	3	2	3	3	3	3	3	3	2	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-403																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-403.1	3	3	3	2	3	3	1	2	1	1	3	3	3	3	3	2	3	3
CH-403.2	3	3	3	2	3	2	1	2	1	1	3	3	3	3	3	2	3	3
CH-403.3	3	3	3	2	3	2	1	2	1	1	3	3	3	3	3	2	3	3
CH-403.4	3	3	3	2	3	2	1	2	1	1	3	3	3	3	3	2	3	3
Average	3	3	3	2	3	2.25	1	3	1	1	3	3	3	3	3	2	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-404																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-404.1	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
CH-404.2	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
CH-404.3	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
CH-404.4	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
Average	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Mapping of CO with PO's and PSO's
Semester-V

Course code CH-501A																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-501A.1	3	3	3	3	3	2	1	3	2	1	3	3	3	3	3	2	3	3
CH-501A.2	3	3	3	3	3	3	1	3	2	1	3	3	3	3	3	3	3	3
CH-501A.3	3	3	3	3	3	3	1	3	2	1	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	2.66	1	3	2	1	3	3	3	3	3	2.66	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-501B																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-501B.1	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
CH-501B.2	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
CH-501B.3	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
CH-501B.4	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
Average	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-502A																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-502A.1	3	3	3	3	3	3	2	3	2	1	3	3	3	2	3	3	3	3
CH-502A.2	3	3	3	3	3	3	2	3	2	1	3	3	3	2	3	3	3	3
CH-502A.3	3	3	3	3	3	2	2	3	2	1	3	3	3	3	3	2	3	3
CH-502A.4	3	3	3	3	3	2	2	3	2	1	3	3	3	3	3	2	3	3
Average	3	3	3	3	3	2.50	2	3	2	1	3	3	3	2.50	3	2.50	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-502B																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-502B.1	3	3	3	3	3	3	1	2	2	1	3	3	3	2	3	3	3	3
CH-502B.2	3	3	3	3	3	3	1	2	2	1	3	3	3	2	3	3	3	3
CH-502B.3	3	3	3	3	3	3	1	2	2	1	3	3	3	2	3	3	3	3
CH-502B.4	3	3	3	3	3	2	1	3	2	1	3	3	3	3	3	2	3	3
CH-502B.5	3	3	3	3	3	2	1	3	2	1	3	3	3	3	3	2	3	3
Average	3	3	3	3	3	2.60	1	2.40	2	1	3	3	3	2.40	3	2.60	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-503																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-503.1	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
CH-503.2	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
CH-503.3	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
CH-503.4	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
Average	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Mapping of CO with PO's and PSO's
Semester-VI

Course code CH-601A																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-601A.1	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
CH-601A.2	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
CH-601A.3	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	3	3	3
CH-601A.4	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	3	3	3
Average	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2.50	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-601B																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-601B.1	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
CH-601B.2	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
CH-601B.3	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
Average	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-602A																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-602A.1	3	3	3	3	3	2	2	3	2	1	3	3	3	3	3	2	3	3
CH-602A.2	3	3	3	3	3	3	2	3	2	1	3	3	3	2	3	3	3	3
CH-602A.3	3	3	3	3	3	3	2	3	2	1	3	3	3	2	3	3	3	3
CH-602A.4	3	3	3	3	3	3	2	3	2	1	3	3	3	2	3	3	3	3
CH-602A.5	3	3	3	3	3	3	2	3	1	1	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	2.80	2	3	1.80	1	3	3	3	2.40	3	2.80	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-602B																		
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
CH-602B.1	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
CH-602B.2	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
CH-602B.3	3	3	3	3	3	2	1	3	2	1	3	3	3	3	3	2	3	3
Average	3	3	3	3	3	2.66	1	3	2	1	3	3	3	2.33	3	2.66	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code CH-603

COs	PO1- Knowledge	PO2- Communication	PO3- Problem Solving	PO4- Individual and Team Work	PO5- Investigation of Problems	PO6- Modern Tool usage	PO7- Science and Society	PO8- Life-Long Learning	PO9- Environment and Sustainability	PO10- Ethics	PO11- Project Management	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CH-603.1	3	3	3	3	3	3	1	2	2	1	3	3	3	2	3	3	3	3
CH-603.2	3	3	3	3	3	3	1	2	2	1	3	3	3	2	3	3	3	3
CH-603.3	3	3	3	3	3	3	1	2	2	1	3	3	3	2	3	3	3	3
CH-603.4	3	3	3	3	3	3	1	2	2	1	3	3	3	2	3	3	3	3
Average	3	3	3	3	3	3	1	2	2	1	3	3	3	2	3	3	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code SEC-601A

COs	PO1- Knowledge	PO2- Communication	PO3- Problem Solving	PO4- Individual and Team Work	PO5- Investigation of Problems	PO6- Modern Tool usage	PO7- Science and Society	PO8- Life-Long Learning	PO9- Environment and Sustainability	PO10- Ethics	PO11- Project Management	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
SEC-601A.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
SEC-601A.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
SEC-601A.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Course code SEC-601B

COs	PO1- Knowledge	PO2- Communication	PO3- Problem Solving	PO4- Individual and Team Work	PO5- Investigation of Problems	PO6- Modern Tool usage	PO7- Science and Society	PO8- Life-Long Learning	PO9- Environment and Sustainability	PO10- Ethics	PO11- Project Management	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
SEC-601B.1	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
SEC-601B.2	3	3	3	3	3	3	1	3	2	1	3	3	3	3	3	3	3	3
SEC-601B.3	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
SEC-601B.4	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
Average	3	3	3	3	3	3	1	3	2	1	3	3	3	2.25	3	3	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Mapping of Courses with PO's and PSO's for core and elective courses (CHEMISTRY FOR FIVE Yrs. INTEGRATED MSc. ENGINEERING PHYSICS)

COs	PO1- Knowledge	PO2- Communication	PO3- Problem Solving	PO4- Individual and Team Work	PO5- Investigation of Problems	PO6- Modern Tool usage	PO7- Science and Society	PO8- Life-Long Learning	PO9- Environment and Sustainability	PO10- Ethics	PO11- Project Management	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CH-101	3	3	3	3	3	2.38	2.75	3	2.38	2.88	3	3	3	3	3	2	3	3
CH-102	3	3	3	3	3	2.5	2	3	2	2.83	3	3	3	3	3	2	3	3
CH-103	3	3	3	2	3	2.25	1	3	1	1	3	3	3	3	3	2	3	3
CH-104	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
CH-201	3	3	3	3	3	2.25	2	2.88	2.38	2.88	3	3	3	3	3	2	3	3
CH-202	3	3	3	3	3	2.25	2	3	2	3	3	3	3	3	3	2	3	3
CH-203	3	3	3	2	3	2	1	2	1	1	3	3	3	3	3	2	3	3
CH-204	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
CH-301	3	3	3	3	3	2.29	2.29	3	2.72	3	3	3	3	3	3	2	3	3
CH-302	3	3	3	3	3	2.25	2	3	3	3	3	3	3	3	3	2	3	3
CH-303	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
CH-304	3	3	3	3	3	3	1	3	2	2	3	3	3	2	3	3	3	3

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COs	PO1- Knowledge	PO2- Communication	PO3- Problem Solving	PO4- Individual and Team Work	PO5- Investigation of Problems	PO6- Modern Tool usage	PO7- Science and Society	PO8- Life-Long Learning	PO9- Environment and Sustainability	PO10- Ethics	PO11- Project Management	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CH-401	3	3	3	3	3	2.83	2.33	2.33	2.33	2.83	3	3	3	3	3	2	3	3
CH-402	3	3	3	3	3	2.25	2	3	2	3	3	3	3	3	3	2	3	3
CH-403	3	3	3	2	3	2.25	1	3	1	1	3	3	3	3	3	2	3	3
CH-404	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
CH-501A	3	3	3	3	3	2.66	1	3	2	1	3	3	3	3	3	2.66	3	3
CH-501B	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
CH-502A	3	3	3	3	3	2.50	2	3	2	1	3	3	3	2.50	3	2.50	3	3
CH-502B	3	3	3	3	3	2.60	1	2.40	2	1	3	3	3	2.40	3	2.60	3	3
CH-503	3	3	3	3	3	3	1	3	2	1	3	3	3	2	3	3	3	3
CH-601A	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2.50	3	3
CH-601B	3	3	3	2	3	2	1	3	1	1	3	3	3	3	3	2	3	3
CH-602A	3	3	3	3	3	2.80	2	3	1.80	1	3	3	3	2.40	3	2.80	3	3
CH-602B	3	3	3	3	3	2.66	1	3	2	1	3	3	3	2.33	3	2.66	3	3
CH-603	3	3	3	3	3	3	1	2	2	1	3	3	3	2	3	3	3	3
SEC-601A	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
SEC-601B	3	3	3	3	3	3	1	3	2	1	3	3	3	2.25	3	3	3	3
Note: 3-Strong, 2-Medium, 1-Weak																		

Program Specific Outcomes (PSO) (Mathematics: For Five Yrs. Integrated MSc. Engineering Physics)

After successful completion of the programme, a student will be able to:

PSO1	Have basic understanding and knowledge in different core areas of Mathematics such as algebra, analysis, calculus, differential equations, mechanics, numerical analysis and in some of the other elective areas. Demonstrate understanding of the concepts /theories/methods from such areas of Mathematics.
PSO2	Have **a broad background** in Mathematics and develop the essential mathematical reasoning, knowledge, skills and aptitude to pursue further studies and research in Mathematics.
PSO3	Communicate mathematics effectively and precisely by written, computational and graphical means.
PSO4	Apply knowledge, understanding, methods, techniques and skills of Mathematics to analyse, evaluate and solve problems of Mathematics and/or the mathematical problems having applications in engineering/science/technology/life sciences/social sciences so as to enhance career prospects in different fields.

Mapping of CO with PO's and PSO's
Semester-I

Course code MT-101															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-101.1	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
MT-101.2	3	3	3	3	3	3	2	3	2	-	3	3	3	3	3
MT-101.3	3	3	3	2	2	3	2	3	2	-	2	3	3	3	3
MT-101.4	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
Average	**3**	**3**	**3**	**2.75**	**2.75**	**3**	**2.5**	**3**	**2.5**	**-**	**2.75**	**3**	**3**	**3**	**3**
Note: 3-Strong, 2-Medium, 1-Weak															

Course code MT-102															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-102.1	3	3	3	3	3	3	2	3	2	--	2	3	3	3	3
MT-102.2	3	3	3	3	3	3	3	3	3	--	2	3	3	3	3
MT-102.3	3	3	3	3	3	2	2	3	3	--	2	3	3	3	3
MT-102.4	3	3	3	2	2	2	2	3	2	--	2	3	3	2	2
Average	**3**	**3**	**3**	**2.75**	**2.75**	**2.5**	**2.25**	**3**	**2.5**	**--**	**2**	**3**	**3**	**2.75**	**2.75**
Note: 3-Strong, 2-Medium, 1-Weak															

Course code MT-103															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-103.1	3	3	3	3	3	3	2	3	2	-	2	3	3	3	3
MT-103.2	3	3	3	3	3	3	2	3	2	-	2	3	3	3	3
MT-103.3	3	3	3	3	3	3	3	3	3	--	3	3	3	3	3
MT-103.4	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
Average	**3**	**3**	**3**	**3**	**3**	**3**	**2.5**	**3**	**2.5**	**-**	**2.5**	**3**	**3**	**3**	**3**
Note: 3-Strong, 2-Medium, 1-Weak															

Mapping of CO with PO's and PSO's
Semester-II

Course code MT-201															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-201.1	3	3	3	2	2	2	2	3	2	-	2	3	3	3	3
MT-201.2	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
MT-201.3	3	3	3	3	3	3	3	3	3	--	2	3	3	3	3
MT-201.4	3	3	3	3	3	3	2	3	3	-	3	3	3	3	3
Average	**3**	**3**	**3**	**2.75**	**2.75**	**2.75**	**2.5**	**3**	**2.75**	**-**	**2.5**	**3**	**3**	**3**	**3**
Note: 3-Strong, 2-Medium, 1-Weak															

Course code MT-202															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-202.1	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
MT-202.2	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
MT-202.3	3	3	3	3	3	3	3	3	3	--	3	3	3	3	3
MT-202.4	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**-**	**3**	**3**	**3**	**3**	**3**
Note: 3-Strong, 2-Medium, 1-Weak															

Course code MT-203															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-203.1	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
MT-203.2	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
MT-203.3	3	3	3	3	3	3	3	3	3	--	3	3	3	3	3
MT-203.4	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**-**	**3**	**3**	**3**	**3**	**3**
Note: 3-Strong, 2-Medium, 1-Weak															

Mapping of CO with PO's and PSO's
Semester-III

Course code SEC-301															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
SEC-301.1	3	3	3	3	3	3	3	3	2	-	3	2	3	3	2
SEC-301.2	3	3	3	3	3	3	3	3	2	-	3	2	3	3	3
SEC-301.3	3	3	3	3	3	2	3	3	2	-	3	2	3	3	3
SEC-301.4	3	3	3	3	3	3	3	3	2	-	3	2	3	3	3
Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**-**	**3**	**2**	**3**	**3**	**2.75**
Note: 3-Strong, 2-Medium, 1-Weak															

Course code MT-301															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-301.1	3	3	3	2	3	2	2	3	2	-	2	3	3	2	3
MT-301.2	3	3	3	2	3	2	2	3	2	-	3	3	3	3	3
MT-301.3	3	3	3	2	3	2	2	3	2	--	3	3	3	3	3
MT-301.4	3	3	3	2	3	2	2	3	2	-	2	3	3	2	2
Average	**3**	**3**	**3**	**2**	**3**	**2**	**2**	**3**	**2**	**-**	**2.5**	**3**	**3**	**2.5**	**2.75**
Note: 3-Strong, 2-Medium, 1-Weak															

Course code MT-302															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-302.1	3	3	3	3	3	2	3	3	3	--	3	3	3	3	3
MT-302.2	3	3	3	3	3	2	3	3	3	--	2	3	3	3	3
MT-302.3	3	3	3	3	3	2	3	3	3	--	3	3	3	3	3
MT-302.4	3	3	3	3	3	2	3	3	3	--	3	3	3	3	3
Average	**3**	**3**	**3**	**3**	**3**	**2**	**3**	**3**	**3**	**--**	**2.75**	**3**	**3**	**3**	**3**
Note: 3-Strong, 2-Medium, 1-Weak															

Course code MT-303															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-303.1	3	3	3	3	3	3	3	3	2	-	3	2	3	3	3
MT-303.2	3	3	3	3	3	3	3	3	2	-	3	2	3	3	3
MT-303.3	3	3	3	3	3	3	3	3	2	--	3	2	3	3	3
MT-303.4	3	3	3	3	3	3	3	3	2	-	3	2	3	3	3
Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**-**	**3**	**2**	**3**	**3**	**3**
Note: 3-Strong, 2-Medium, 1-Weak															

Mapping of CO with PO's and PSO's
Semester-IV

Course code MT-401															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-401.1	3	3	3	2	3	2	2	3	-	-	2	3	3	3	3
MT-401.2	3	3	3	2	2	2	2	3	-	-	2	3	3	2	2
MT-401.3	3	3	3	2	3	2	3	3	--	--	2	3	3	2	3
MT-401.4	3	3	3	2	2	2	2	3	-	-	2	3	3	2	2
Average	**3**	**3**	**3**	**2**	**2.5**	**2**	**2.25**	**3**	**-**	**-**	**2**	**3**	**3**	**2.25**	**2.5**
Note: 3-Strong, 2-Medium, 1-Weak															

Course code MT-402															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-402.1	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
MT-402.2	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
MT-402.3	3	3	3	3	3	3	3	3	3	--	3	3	3	3	3
MT-402.4	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**-**	**3**	**3**	**3**	**3**	**3**
Note: 3-Strong, 2-Medium, 1-Weak															

Course code MT-403															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-403.1	3	3	3	3	3	3	3	3	3	--	3	2	3	3	3
MT-403.2	3	3	3	3	3	3	3	3	3	--	3	3	3	3	3
MT-403.3	3	3	3	3	3	3	3	3	3	--	3	2	3	3	3
MT-403.4	3	3	3	3	3	3	3	3	3	--	3	3	3	3	3
Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**--**	**3**	**2.5**	**3**	**3**	**3**
Note: 3-Strong, 2-Medium, 1-Weak															

Mapping of CO with PO's and PSO's
Semester-V

Course code SEC-501A															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
SEC-501A.1	3	3	3	3	3	3	3	3	2	-	3	3	3	3	3
SEC-501A.2	3	3	3	3	3	3	3	3	2	-	3	3	3	3	3
SEC-501A.3	3	3	3	3	3	3	3	3	2	--	3	3	3	3	3
SEC-501A.4	3	3	3	3	3	3	3	3	2	-	3	3	3	3	3
Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**-**	**3**	**3**	**3**	**3**	**3**
Note: 3-Strong, 2-Medium, 1-Weak															

Course code SEC-501B															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
SEC-501B.1	3	3	3	3	3	3	2	3	2	-	2	3	3	3	3
SEC-501B.2	3	3	3	3	3	3	3	3	2	-	3	3	3	3	3
SEC-501B.3	3	3	3	3	3	3	3	3	2	--	3	3	3	3	3
SEC-501B.4	3	3	3	3	3	3	2	3	2	-	2	3	3	3	3
Average	**3**	**3**	**3**	**3**	**3**	**3**	**2.5**	**3**	**2**	**-**	**2.5**	**3**	**3**	**3**	**3**
Note: 3-Strong, 2-Medium, 1-Weak															

Course code MT-501A															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-501A.1	3	3	3	2	3	2	2	3	-	--	2	3	3	3	2
MT-501A.2	3	3	3	3	3	3	2	3	2	--	3	3	3	3	3
MT-501A.3	3	3	3	3	3	3	2	3	2	--	3	3	3	3	3
MT-501A.4	3	3	3	2	3	2	2	3	-	--	2	3	3	3	2
Average	**3**	**3**	**3**	**2.5**	**3**	**2.5**	**2**	**3**	**2**	**--**	**2.5**	**3**	**3**	**3**	**2.5**
Note: 3-Strong, 2-Medium, 1-Weak															

Course code MT-501B															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-501B.1	3	3	3	3	3	3	3	3	2	-	3	3	3	3	3
MT-501B.2	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
MT-501B.3	3	3	3	3	3	3	3	3	3	--	3	3	3	3	3
MT-501B.4	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2.75**	**-**	**3**	**3**	**3**	**3**	**3**
Note: 3-Strong, 2-Medium, 1-Weak															

Course code MT-502A															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-502A.1	3	3	3	3	3	3	3	3	2	-	2	3	3	3	3
MT-502A.2	3	3	3	2	3	3	3	3	3	-	3	3	3	3	3
MT-502A.3	3	3	3	3	3	3	3	3	3	--	3	3	3	3	3
MT-502A.4	3	3	3	2	2	2	2	3	2	-	2	3	3	3	3
Average	**3**	**3**	**3**	**2.5**	**2.75**	**2.75**	**2.75**	**3**	**2.5**	**-**	**2.5**	**3**	**3**	**3**	**3**
Note: 3-Strong, 2-Medium, 1-Weak															

Course code MT-502B															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-502B.1	3	3	3	3	3	3	3	3	3	--	3	3	3	3	3
MT-502B.2	3	3	3	3	3	3	3	3	2	--	2	3	3	3	3
MT-502B.3	3	3	3	3	3	3	3	3	3	--	3	3	3	3	3
MT-502B.4	3	3	3	3	3	2	3	3	2	--	3	3	3	3	3
Average	**3**	**3**	**3**	**3**	**3**	**2.75**	**3**	**3**	**2.5**	**--**	**2.75**	**3**	**3**	**3**	**3**
Note: 3-Strong, 2-Medium, 1-Weak															

Course code MT-503															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-503.1	3	3	3	3	3	2	2	3	2	--	3	3	3	3	3
MT-503.2	3	3	3	3	3	3	3	3	2	--	3	3	3	3	3
MT-503.3	3	3	2	3	2	3	3	3	-	--	3	2	2	3	2
MT-503.4	3	3	2	3	2	3	3	3	-	--	3	2	2	3	2
Average	**3**	**3**	**2.5**	**3**	**2.5**	**2.75**	**2.75**	**3**	**2**	**--**	**3**	**2.5**	**2.5**	**3**	**2.5**
Note: 3-Strong, 2-Medium, 1-Weak															

Mapping of CO with PO's and PSO's
Semester-VI

Course code MT-601A															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-601A.1	3	3	3	3	3	2	2	3	-	--	2	3	3	2	3
MT-601A.2	3	3	3	3	3	3	3	3	2	--	3	3	3	3	3
MT-601A.3	3	3	3	3	3	2	3	3	-	--	2	3	3	2	3
MT-601A.4	3	3	3	2	3	2	2	3	-	--	2	3	3	2	2
Average	**3**	**3**	**3**	**2.75**	**3**	**2.25**	**2.5**	**3**	**2**	**--**	**2.25**	**3**	**3**	**2.25**	**2.75**
Note: 3-Strong, 2-Medium, 1-Weak															

Course code MT-601B															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-601B.1	3	3	3	3	3	2	3	3	2	-	2	3	3	2	3
MT-601B.2	3	3	3	3	3	3	3	3	2	-	3	3	3	3	3
MT-601B.3	3	3	3	3	3	3	3	3	2	--	3	3	3	3	3
MT-601B.4	3	3	3	2	2	2	2	3	2	-	2	3	3	3	3
Average	**3**	**3**	**3**	**2.75**	**2.75**	**2.5**	**2.75**	**3**	**2**	**-**	**2.5**	**3**	**3**	**2.75**	**3**
Note: 3-Strong, 2-Medium, 1-Weak															

Course code MT-602A															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-602A.1	3	3	3	3	3	3	3	3	2	-	2	3	3	3	3
MT-602A.2	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
MT-602A.3	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
MT-602A.4	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2.75**	**-**	**2.75**	**3**	**3**	**3**	**3**
Note: 3-Strong, 2-Medium, 1-Weak															

Course code MT-602B															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-602B.1	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
MT-602B.2	3	3	3	3	3	3	3	3	3	-	3	3	3	3	3
MT-602B.3	3	3	3	3	2	3	3	3	2	-	3	3	3	3	3
MT-602B.4	3	3	3	3	3	3	3	3	2	-	3	3	3	3	3
Average	**3**	**3**	**3**	**3**	**2.75**	**3**	**3**	**3**	**2.5**	**-**	**3**	**3**	**3**	**3**	**3**
Note: 3-Strong, 2-Medium, 1-Weak															

Course code MT-603															
COs	**PO1- Knowledge**	**PO2- Communication**	**PO3- Problem Solving**	**PO4- Individual and Team Work**	**PO5- Investigation of Problems**	**PO6- Modern Tool usage**	**PO7- Science and Society**	**PO8- Life-Long Learning**	**PO9- Environment and Sustainability**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
MT-603.1	3	3	3	3	3	3	3	3	3	--	3	3	3	3	3
MT-603.2	3	3	3	3	3	3	3	3	3	--	3	3	3	3	3
MT-603.3	3	3	2	3	2	3	3	3	-	--	3	2	2	3	2
MT-603.4	3	3	2	3	2	3	3	3	-	--	3	2	2	3	2
Average	**3**	**3**	**2.5**	**3**	**2.5**	**3**	**3**	**3**	**3**	**--**	**3**	**2.5**	**2.5**	**3**	**2.5**
Note: 3-Strong, 2-Medium, 1-Weak															

Mapping of Courses with PO's and PSO's for core and elective courses (Mathematics: FOR FIVE Yrs. INTEGRATED MSc. ENGINEERING PHYSICS)

COs	PO1- Knowledge	PO2- Communication	PO3- Problem Solving	PO4- Individual and Team Work	PO5- Investigation of Problems	PO6- Modern Tool usage	PO7- Science and Society	PO8- Life-Long Learning	PO9- Environment and Sustainability	PO10- Ethics	PO11- Project Management	PSO1	PSO2	PSO3	PSO4
MT- 101	**3**	**3**	**3**	**2.75**	**2.75**	**3**	**2.5**	**3**	**2.5**	**-**	**2.75**	**3**	**3**	**3**	**3**
MT- 102	**3**	**3**	**3**	**2.75**	**2.75**	**2.5**	**2.25**	**3**	**2.5**	**--**	**2**	**3**	**3**	**2.75**	**2.75**
MT- 103	**3**	**3**	**3**	**3**	**3**	**3**	**2.5**	**3**	**2.5**	**-**	**2.5**	**3**	**3**	**3**	**3**
MT- 201	**3**	**3**	**3**	**2.75**	**2.75**	**2.75**	**2.5**	**3**	**2.75**	**-**	**2.5**	**3**	**3**	**3**	**3**
MT- 202	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**-**	**3**	**3**	**3**	**3**	**3**
MT- 203	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**--**	**3**	**3**	**3**	**3**	**3**
SEC- 301	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**-**	**3**	**2**	**3**	**3**	**2.75**
MT- 301	**3**	**3**	**3**	**2**	**3**	**2**	**2**	**3**	**2**	**-**	**2.5**	**3**	**3**	**2.5**	**2.75**
MT- 302	**3**	**3**	**3**	**3**	**3**	**2**	**3**	**3**	**3**	**--**	**2.75**	**3**	**3**	**3**	**3**
MT- 303	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**-**	**3**	**2**	**3**	**3**	**3**

CONTINUED FROMPRE PAGE……...

COs	PO1- Knowledge	PO2- Communication	PO3- Problem Solving	PO4- Individual and Team Work	PO5- Investigation of Problems	PO6- Modern Tool usage	PO7- Science and Society	PO8- Life-Long Learning	PO9- Environment and Sustainability	PO10- Ethics	PO11- Project Management	PSO1	PSO2	PSO3	PSO4
MT- 401	**3**	**3**	**3**	**2**	**2.5**	**2**	**2.25**	**3**	**-**	**-**	**2**	**3**	**3**	**2.25**	**2.5**
MT- 402	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**-**	**3**	**3**	**3**	**3**	**3**
MT- 403	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**--**	**3**	**2.5**	**3**	**3**	**3**
SEC- 501A	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**-**	**3**	**3**	**3**	**3**	**3**
SEC-501B	**3**	**3**	**3**	**3**	**3**	**3**	**2.5**	**3**	**2**	**-**	**2.5**	**3**	**3**	**3**	**3**
MT-501A	**3**	**3**	**3**	**3**	**3**	**3**	**2.5**	**3**	**2**	**-**	**2.5**	**3**	**3**	**3**	**2.5**
MT-501B	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2.75**	**-**	**3**	**3**	**3**	**3**	**3**
MT-502A	**3**	**3**	**3**	**2.5**	**2.75**	**2.75**	**2.75**	**3**	**2.5**	**-**	**2.5**	**3**	**3**	**3**	**3**
MT-502B	**3**	**3**	**3**	**3**	**3**	**2.75**	**3**	**3**	**2.5**	**--**	**2.75**	**3**	**3**	**3**	**3**
MT-503	**3**	**3**	**2.5**	**3**	**2.5**	**2.75**	**2.75**	**3**	**2**	**--**	**3**	**2.5**	**2.5**	**3**	**2.5**
MT- 601A	**3**	**3**	**3**	**2.75**	**3**	**2.25**	**2.5**	**3**	**2**	**--**	**2.25**	**3**	**3**	**2.25**	**2.75**
MT-601B	**3**	**3**	**3**	**2.75**	**2.75**	**2.5**	**2.75**	**3**	**2**	**-**	**2.5**	**3**	**3**	**2.75**	**3**
MT-602A	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2.75**	**-**	**2.75**	**3**	**3**	**3**	**3**
MT-602B	**3**	**3**	**3**	**3**	**2.75**	**3**	**3**	**3**	**2.5**	**-**	**3**	**3**	**3**	**3**	**3**
MT-603	**3**	**3**	**2.5**	**3**	**2.5**	**3**	**3**	**3**	**3**	**--**	**3**	**2.5**	**2.5**	**3**	**2.5**
Note: 3-Strong, 2-Medium, 1-Weak															

KURUKSHETRA UNIVERSITY KURUKSHETRA

Five Years Integrated
M. Sc. Engineering Physics (3 Years BSc+2Years M.Sc.)
Under CBCS-LOCF

(Effective from the Academic Session 2023-24)
(7th to 10th semester)

Department of Physics
INSTITUTE OF INTEGRATED & HONORS STUDIES
Kurukshetra University
Kurukshetra - 136 119
Haryana (INDIA)

Introduction:

M. Sc. Engineering Physics (5 years Integrated) was started way back in 2009 in the Physics Department, Institute of Integrated and Honors Studies (IIHS) of Kurukshetra University on the advice of Higher Education Department Haryana. This course is of 5 Years (10 Semesters). ***After completion of 3 years (6 Semesters), students will be awarded B. Sc. Engineering Physics which is equivalent to B. Sc. (Non-Medical).*** The programme was prepared by the faculty of Physical Sciences of Kurukshetra University following the guidelines of the model curriculum developed by UGC, New Delhi and looking the need of the students to compete with recent trends in higher education at national and international level. The same has been finalized by inviting comments, suggestions from experts in individual from universities, institutes, industries and alumni of the institute.

Following the guidelines of UGC, New Delhi and looking at the better employability, entrepreneurship possibilities and also to enhance the latent skills of the students Kurukshetra University has adopted the ***Choice Based Credit System*** **(CBCS)** system for assessing performance of the students from the academic year 2020-2021. The CBCS system offers flexibility to the students in choosing courses of their own choice from the exhaustive list comprising core, elective, skill based, specializations and minor components that are evaluated following the grading system. The university shall be implementing the revised syllabus of M. Sc. Engineering Physics (5 years Integrated) First Year from the coming academic year i.e., 2020-2021. This document provides detailed information on methodology of choosing different components of M. Sc. Engineering Physics (5 years Integrated) First to Fifth Year (Semester I through X) theory and practical courses.

Master of Science (M. Sc.) Engineering Physics (5 years Integrated) is a post-graduation course of Kurukshetra University. The students pursuing this course will develop foundation aspects of Physics, Chemistry and Mathematics during the first 3 years. *In the next 2 years, the students pursuing the course will develop in-depth*

understanding of various aspects of the core branches of Physics along with the latest trends, developments and role of physics in science and technology or about the Engineering aspects of the physics through the study of subjects like Mathematical Tools for Physicists & Engineers classical mechanics, quantum mechanics, Electrodynamics and wave propagation Engineering, Engineering Electronics, Engineering Statistical Physics, Solid State Engineering Physics, , Nuclear Engineering physics, Materials Science Engineering, Modern Medical Imaging systems, Laser systems and basics of fiber optics technology, Modern Characterization techniques, Project work for synthesis, design and characterization of advance and smart materials etc. The course also helps the students in enhancing their analytical skill through the embedded component of the problem solving skills, seminar activities and hands-on and minds-in activities of the course. The courses offered by the University are of student-centric nature and help them to understand the basic laws of nature and develop necessary skills to apply them to the advanced areas of studies in science and engineering.

There are **core or mandatory courses (theory and laboratory courses)** meant to provide adequate knowledge on various aspects of physics discipline and to prepare the students for applying them for advanced courses. In addition, there will be skill based elective (specialization) as well as few open elective courses enabling cross-discipline movement to the students. The skill based elective courses are of more advanced nature and help the students to develop their skills in specific fields through more of the hands-on activities. The details of the courses and activities are given with detailed syllabus.

Scheme and Syllabi of five years integrated
M. Sc. ENGINEERING PHYSICS Programme
(From 7th to 10th semester)
Under CBCS-LOCF
(w. e. f. from the Academic Session 2023-24)

4th Year (7th and 8th semesters)

SEMESTER VII

Course Type & No.	Course Code	Course Nomenclature	Credits (L+T+P)	Teaching Hours per week	Maximum Marks			Duration of Examination (Hrs.)
					Internal Assessment*	End-semester Examination	Total	
Core Course-1	EP- 701	Mathematical Tools for Physicists & Engineers	4+0+0	4	20	80	100	3
Core Course-2	EP-702	Classical Mechanics	4+0+0	4	20	80	100	3
Core Course-3	EP-703	Quantum Mechanics-I	4+0+0	4	20	80	100	3
Core Course-4	EP-704	Engineering Electronics	4+0+0	4	20	80	100	3
Core Course-5	EP-705	Engineering Physics Laboratory-I (General)	0+0+4	8	----------	100	100	4
Total Credits/Marks in core courses in semester-VII			**20**				**500**	
Number of Elective courses: Nil			--------	----------			------	

L-Theory Lectures, T- Tutorials, P-Practical

*Internal Assessment marks

20% marks in each theory paper shall be reserved for Internal Assessment. The following parameters (with weightage of each) forming the basis of award of Internal Assessment:-

(i) One test/Seminar for each paper (one period duration) : 50%

(ii) One Assignment for each paper : 25%

(iii) Attendance : 25%

4th Year
SEMESTER VIII

Course Type & No.	Course Code	Course Nomenclature	Credits (L+T+P)	Teaching Hours per week	Maximum Marks			Duration of Examination (Hrs.)
					Internal Assessment*	End-semester Examination	Total	
Core Course-6	EP- 801	Engineering Statistical Mechanics	4+0+0	4	20	80	100	3
Core Course-7	EP-802	Quantum Mechanics-II	4+0+0	4	20	80	100	3
Core Course-8	EP-803	Nuclear Engineering Physics	4+0+0	4	20	80	100	3
Core Course-9	EP-804	Spectroscopy of Atoms and Molecules	4+0+0	4	20	80	100	3
Core Course-10	EP-805	Engineering Physics Laboratory-I I (Electronics)	0+0+4	8	----------	150	150	4
Total Credits/Marks in core courses in semester-VIII			**20**				550	
Number of Elective/Open Elective courses: 1								
Open Elective-1	*As per the selection of course made by the student from the list of Open elective courses prepared by the Institute*		2+0+0	2	15	35	50	1:30
Total credits/marks in semester-VIII			**22**				**600**	

Structure and Syllabi
M. Sc. ENGINEERING PHYSICS (5 years Integrated) Programme
Under CBCS-LOCF
(w. e. f. from the Academic Session 2024-25)

5th Year (9th and 10th semesters)

SEMESTER-IX

Course Type & No.	Course Code	Course Nomenclature	Credits (L+T+P)	Teaching Hours per week	Maximum Marks			Duration of Examination (Hrs.)
					Internal Assessment*	End-semester Examination	Total	
Core Course-11	EP- 901	Solid State Engineering Physics	4+0+0	4	20	80	100	3
Core Course-12	EP-902	Electrodynamics and wave propagation Engineering	4+0+0	4	20	80	100	3
Core Course-13	EP-903	Laser systems and Basics of Fiber optics Technology	4+0+0	4	20	80	100	3
Total Credits/Marks in core courses in semester-IX			**12**				**300**	**------**
Number of Elective/Open Elective courses: 3								
Elective Course-1	EP-904(A): Advance Engineering Electronics-I Or EP-904(B): Radiation Physics - I		4+0+0	4	20	80	100	3
Elective Course-2	EP-905(A): Advance Engineering Electronics Laboratory **or** EP-905(B): Radiation Physics Laboratory		0+0+4	8		100	100	4
Open Elective-II	*As per the selection of course made by the student from the list of Open elective courses prepared by the Institute*		2+0+0	2	15	35	50	1:30
Total Credits/Marks in Elective/open elective courses in semester-IX			**10**				**250**	
Total credits/marks in semester-IX			**22**				**550**	

Note: Elective papers will be offered according to the availability of the Faculty and Laboratory facility in the Department.

SEMESTER-X

Course Type & No.	Course Code	Course Nomenclature	Credits (L+T+P)	Teaching Hours per week	Maximum Marks			Duration of Examination (Hrs.)
					Internal Assessment*	End-semester Examination	Total	
Core Course-13	EP-1001	Materials Science Engineering	4+0+0	4	20	80	100	3
Core Course-14	EP-1002	Modern Characterization Techniques	4+0+0	4	20	80	100	3
Core Course-15	EP-1003	Modern Medical Imaging Systems	4+0+0	4	20	80	100	3
Total Credits/Marks in core courses in semester-X			**12**				**300**	
Number of Elective/Open Elective courses: 2								
Elective Course-3	EP-1004(A): Advance Engineering Electronics-II Or EP-1004(B): Radiation Physics-II		4+0+0	4	20	80	100	3
Elective Course-4	EP-1005(A): Advance Engineering Physics Laboratory		0+0+4	8	----------	150	150	4
	or							
	EP-1005(B): Project Work - Dissertation (External Evaluation and Viva-Voce)		4	----------		150$		---------
Total Credits/Marks in Elective/open elective courses in semester-X			**8**				**250**	
Total credits/marks in semester-X			**20**				**550**	

Note: Elective course-3 in 10th semester is to be selected in the same specialization as selected in 9th semester.

$-100 marks for Project and 50 marks for Viva-Voce

Open Elective Papers

For the Students of M.Sc. Engineering Physics							
A student will earn four credits by selecting one open elective paper of two credits in 8th semester and one more such paper of same credits in 9th semester, out of the open elective papers offered by the departments in the Institute other than the Physics Department.							
For the Students of M. Sc. Bio-Tech & M. Sc. Economics in IIHS							
The Department of Physics offers the following open elective papers to the students of **M. Sc. Bio-Tech & M. Sc. Economics in the Institute**.							
Course Code	**Course Title**	**Credits**	**Teaching Hours per week**	**Maximum Marks**			**Duration of Examination (Hrs.)**
				Internal Assessment*	End-semester Examination	Total	
OE-EP806 (For 8th Semester)	Weather Forecasting	**2**	**2**	**15**	**35**	**50**	**1:30**
OE-EP906 (For 9th Semester)	Medical Physics	**2**	**2**	**15**	**35**	**50**	**1:30**

Note: A paper shall be run only if the number of students opting for it is at least 20. There will be an upper limit of 40 students in each paper.

M. Sc. Engineering Physics
Semester-VII
Subject: Physics (Paper Code: EP 701)
Paper: Mathematical Tools for Physicists & Engineers
No. of Credits: 4

Max. Marks: 100
Theory: 80
Internal Assessment: 20
Time: 3 hrs

Note:-

1. Nine Questions will be set in total
2. Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have five parts and the answer should be in brief but not in Yes/ No.
3. Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4. 20% numerical problems are to be set.
5. Use of scientific (non-programmable) calculator is allowed.

Unit I

Vector spaces and Matrices

Definition of a linear vector space, Linear independence, basis and dimension, scalar Product, Orthonormal basis, Gram-Schmidt Orthogonalization process, Linear operators, Matrices: Orthogonal, Unitary and Hermitian matrices, Eigenvalues and eigenvectors of matrices, Matrix diagonalization.

Unit II

Differential equations

Second order linear differential equation with variable coefficients, Solution of Bessel's, Legendre’s, Laguerre’s and Hermite's equations.

Complex Variables

Function of a complex variable, Cauchy Riemann conditions, Cauchy’s integral theorem, Cauchy's integral formula, Taylor's and Laurent series, Cauchy's Residue theorem, Singular points and evaluation of residues, Jordan's Lemma.

Unit III

Special Functions

Definition of special functions, Generating functions for Bessel function of integral order Jn(x) , Recurrence relations, Integral representation; Legendre polynomials Pn(x) , Generating functions for Pn(x) , Recurrence relations; Hermite Polynomials, Generating functions, Rodrigue's formula for Hermite polynomials; Laguerre polynomials, Generating function and Recurrence relations.

Unit IV

Integral Transforms

Integral transform, Laplace transform, some simple properties of Laplace transforms such as first and second shifting property, Inverse Laplace Transform by partial fractions method, Laplace transform of derivatives, Laplace Transform of integrals, Fourier series, Evaluation of coefficients of Fourier series Cosine and Sine series, Fourier Transforms, Fourier sine Transforms, Fourier cosine Transforms.

CO No.	Course code (EP-701) : Mathematical Tools for Physicists & Engineers After successfully completing the course, student will be able to:
CO-1	Understand the basic concept and applications of Linear vector space, matrix algebra & linear operators and be able to solve the related mathematical problems in Physics.
CO-2	Solve the problems based on differential equations and also be able to determine the residues of a complex function and use the residue theorem to compute certain types of integrals.
CO-3	Have good grasp of special functions that would equip the student for effective tackling of specific problems in physics.
CO-4	Learn about the series expansion & different integral transformation and be able to use their expertise to solve the different mathematical problems relevant to the physical sciences.

Text and Reference Books :

Mathematical Physics by P.K. Chattopadhyay (T)

Mathematical Physics by B.S.Rajput

Matrices and Tensors for Physicists, by A W Joshi

Mathematical Physics by Mathews and Walkers

Mathematics for Physicists by Mary L Boas

M. Sc. Engineering Physics
Semester-VII
Subject: Physics (Paper Code: EP 702)
Paper: Classical Mechanics
No. of Credits: 4

Max. Marks: 100
Theory: 80
Internal Assessment: 20
Time: 3 hrs

Note:-

1 Nine Questions will be set in total
2 Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have five parts and the answer should be in brief but not in Yes/ No.
3 Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4 20% numerical problems are to be set.
5 Use of scientific (non-programmable) calculator is allowed.

Unit I

Survey of Elementary Principles and Lagrangian Formulation

Newtonian mechanics: mechanics of one and many particle systems; conservation laws, motion with variable Mass-The rocket Problem, constraints, their classification; virtual displacement, virtual work, D' Alembert's principle, Lagrange's equations; velocity dependent potential, Rayleigh Function, Invariance of Lagrangian Under Galilean Transformation, dissipative forces, generalized coordinates and momenta; integrals of motion; symmetries of space and time and their connection with conservation laws- conservation of Energy, Conservation of Linear Momentum, conservation of angular Momentum.

Unit II

Moving coordinate systems and Motion in a central force field

Rotating frames; inertial forces; terrestrial applications of Coriolis force, Central force: definition and characteristics; two body problem- Reduction to the equivalent one body problem; conservation theorem-First Integral of motion, virial theorem, closure and stability of circular orbits; general analysis of orbits; Kepler's laws, Kepler’s equations and the Kepler Problem ; the Laplace-Runge-Lenz vector, Centre of Mass and Laboratory Coordinate systems, cross section, Rutherford scattering.

Unit III

Hamiltonian Formalism

Legendre transformation, Hamiltonian equations of motion; the physical significance of the Hamiltonian-H; Cyclic/ignorable coordinates; Canonical transformation; generating functions;

Poisson bracket & properties of Poisson bracket, integrals of motion, Poisson's theorem, invariance of Poisson Bracket under canonical Transformation, Lagrange's Brackets, Infinitesimal Contact Transformation; angular momentum and Poisson bracket relations; Liouville's theorem and its applications.

Unit IV

Variational Principle, Equation of motion and Hamilton-Jacobi Equation

Principle of least action; derivation of equations of motion; variation and end points; Hamilton's principle and characteristic functions; Hamilton-Jacobi equation, harmonic oscillator problem as an example of Hamilton Jacobi Method.

Small Oscillations

Small oscillations; stable and unstable equilibrium, normal modes and coordinates.

CO No.	**Course code (EP-702) : Classical Mechanics**
	After successfully completing the course, student will be able to:
CO-1	Learn different mechanical concepts related to advanced problems involving the dynamic motion of classical mechanical systems.
CO-2	Describe and understand the concepts of central force motion and moving co-ordinate systems.
CO-3	Have basic ideas about the canonical transformation & poisson's Bracket which will lead to understand the concepts of quantum mechanics.
CO-4	Understand theory of small oscillations and also be able to apply the Variational Principle to solve the various problems related to mechanical systems.

Text and Reference Books :

Classical Mechanics by N C Rana and P S Joag (Tata Mcgraw Hill, 1991)

Classical Mechanics by H Goldstein (Addison Wesley, 1980)

Mechanics by A Sommerfeld (Academic Press, 1952)

Introduction to Dynamics by I perceival and D Richards (Cambridge Univ. Press, 1982)

M. Sc. Engineering Physics
Semester-VII
Subject: Physics (Paper Code: EP 703)
Paper: Quantum Mechanics-I
No. of Credits: 4

Max. Marks: 100
Theory: 80
Internal Assessment: 20
Time: 3 hrs

Note:-

1 Nine Questions will be set in total
2 Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have five parts and the answer should be in brief but not in Yes/ No.
3 Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4 20% numerical problems are to be set.
5 Use of scientific (non-programmable) calculator is allowed.

Unit I

General formalism of Quantum Mechanics

States and operators; Representation of States and dynamical variables; Linear vector space; Bra Ket notation, Linear operators; Orthonormal set of vectors, Completeness relation; Hermitian operators, their eigenvalues and eigenvectors, The fundamental commutation relation; Schwartz Inequality, Commutation rule and the uncertainty relation; Simultaneous eigenstates of commuting operators; Postulates of quantum mechanics, The unitary transformation; Dirac delta function; Relation between kets and wave functions; Matrix representation of operators; Solution of linear harmonic oscillator problem by operator method (Ladder Operators), Matrix elements of x, p, a, a^+ and H; Uncertainty Product for simple harmonic oscillator.

Unit II

Angular momentum operator

Angular momentum operators and their representation in spherical polar co-ordinates; Eigenvalues and eigenvectors of L^2, spherical harmonics; Commutation relations among Lx, Ly, Lz ; Rotational symmetry and conservation of angular momentum; Eigenvalues of J^2 and Jz and their matrix representation; Pauli spin matrices; Addition of angular momentum, Clebsch-Gordan coefficients and their calculation for $j_1 = j_2 = 1/2$, $j_1 = 1$, $j_2 = 1/2$ and $j_1 = j_2 = 1$.

Unit III

Solution of Schrodinger equation for three dimensional problems

The three dimensional harmonic oscillator in both cartesian and spherical polar coordinates, eigenvalues eigenfunctions and the degeneracy of the states; Solution of the hydrogen atom problem, the eigenvalues eigenfunctions and the degeneracy.

Unit IV

Perturbation Theory

Time independent perturbation theory; Non-degenerate case, the energies and wave functions in first order, the energy in second order; Anharmonic perturbations of the form λx^3 and λx^4; Degenerate perturbation theory; Stark effect on the ground and the first excited state of hydrogen.

CO No.	Course code (EP-703) : Quantum Mechanics-I After successfully completing the course, student will be able to:
CO-1	Understand and explain the application of different operators and fundamental commutation relation which are of fundamental importance in Quantum mechanics.
CO-2	Have better understanding of concepts of spherical polar co-ordinates, spherical harmonics, Orbital & Spin angular momentum, as well as the rules for quantization and addition of these angular momenta.
CO-3	Solve the three dimensional harmonic oscillator and hydrogen atom problem and be able to realize the role of such analysis to the world of atoms and molecules.
CO-4	Use perturbation theory to obtain corrections to energy eigen-states and eigen-values when an external electric or magnetic field is applied to a system for e.g. study of Stark effect of the first excited state of hydrogen.

Text and Reference Books:

Quantum Mechanics by Ghatak and Loknathan

Quantum Mechanics by Powell and Craseman

Quantum Mechanics by S. Gasiorowicz

Quantum Mechanics by A.P.Messiah

Modern Quantum Mechanics by J.J.Sakurai

Quantum Mechanics by L.I.Schiff

Quantum Mechanics by Mathews and Venkatesan

M. Sc. Engineering Physics
Semester-VII
Subject: Physics (Paper Code: EP 704)
Paper: Engineering Electronics
No. of Credits: 4

Max. Marks: 100
Theory: 80
Internal Assessment: 20
Time: 3 hrs

Note:-.

1 Nine Questions will be set in total
2 Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have five parts and the answer should be in brief but not in Yes/ No.
3 Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4 20% numerical problems are to be set.
5 Use of scientific (non-programmable) calculator is allowed.

Unit I

Network theorems

Node theorem, Millman's theorem, Thevenin's theorem, Norton's theorem, superposition theorem.

Introductory Semiconductor Physics

Intrinsic and extrinsic semiconductors, elemental and compound semiconductors, direct and indirect band gap semiconductors, charge densities in p and n type semiconductors, conduction by charge drift and diffusion, the pn junction, derivation of pn diode equation, Zener and avalanche breakdowns, clipping and clamping circuits.

Unit II

Bipolar junction Transistor (BJT): Transistor operating modes, Transistor action, Transistor biasing configurations and characteristics, Transistor h-parameters, The Ebers-Moll model.

Field effect transistors (FET): Basic structure and operation, volt-ampere characteristics of JFET, metal oxide semiconductor field effect transistor (MOSFET), physical structure, operation and characteristics , enhancement and depleted mode of operation, comparison of p and n channel FETS.

Unit III

Photo-electric and other Electronic Devices

Zener Diode, Varactor Diode, Photodiode, Light Emitting Diode (LED), Solar Cell, Piezo-electric Crystals, Diode Lasers, Condition for Laser Action, Optical Gain, Memory Devices: Random Access Memory, Read Only Memory (Basic idea).

Unit IV

Negative Resistance Devices

Tunnel Diode, Backward diode, Unijunction Transistor, p-n-p-n devices, p-n-p-n characteristics, Silicon Controlled switch, SCS Characteristics. Basic Circuit Principles for NR Switching Circuits: Monostable, Bystable and Astable Operations.

CO No.	Course code (EP-704) : Engineering Electronics After successfully completing the course, student will be able to:
CO-1	Solve the complex electrical networks using different network theorems and also be able to understand the basic concept and different applications related to PN junction diode.
CO-2	Understand and describe the basic structure, working principle and characteristics of Bipolar Junction & Field Effect transistors. These devices are of fundamental importance in electronic science.
CO-3	Have basic idea about the various electronic & optoelectronic devices and be able to realize the use of these devices to the fields of science & technology.
CO-4	Understand and explain the working of important negative resistance devices like Tunnel diode, Backward diode, UJT, SCS etc.

Text and Reference Books :

Semiconductor Devices - Physics and Technology by S.M .Sze ,Wiley (1985)

Introduction to Semiconductor Devices by M.S. Tyagi, John Wiley & Sons

Measurement, Instrumentation and Experimental Design in Physics and Engineering

by M.Sayer and A. Mansingh, Prentice Hall, India (2000)

Optical electronics by Ajoy Ghatak and K. Thygarajan, Cambridge Univ. Press.

Semiconductor Electronics by A.K.Sharma ,New Age International Publisher(1996)

Laser and Non-linear optics by B.B.Laud. ,Wiley Eastern Limited (1985)

Pulse, Digital and Switching Waveforms by Jacob Millman and Herbert Taub ,

Mc Graw Hill Book Company (1965)

M. Sc. Engineering Physics
Semester-VII
Subject: Physics (Paper Code: EP 705)
Paper: Engineering Physics Laboratory-I (General)
Credits: 4

Max. Marks: 100
Time: 4 hrs

Special Note: -

4.Do any eight experiments from the given list of experiments.
5.The students are required to calculate the error involved in a particular experiment.
6.The Practical examination will be held in a single session of 4 hours.

Distribution of Marks:

Experiment	50 marks
Viva- voce	30 marks
Lab Record	20 marks
Total	100 marks

List of Experiments

1. Determination of Half Life of 'In'.
2. Determination of Ionization Potential of Lithium.
3. Measurement of resistivity of a semiconductor by four probe method at different temperatures and Determination of band gap.
4. Measurement of Wavelength of He-Ne Laser light using ruler.
5. Measurement of thickness of thin wire with laser
6. e/m of electron by Helical method.
7. To study uncertainty principle using Laser.
8. To study Faraday Effect using He-Ne Laser.
9. To determine Planck's Constant (h) by measuring the voltage drop across light-emitting diodes (LEDs) of different colours.
10. Measurement of thickness of thin films using Michelson interferometer.
11. Measurement of coherence length using Michelson interferometer.
12. To find Flashing and Quenching voltage of Neon gas and determine the capacitance of a unknown capacitor.
13. To determine the capacitance of a parallel plate Capacitor using Capacitance and permittivity kit
14. Determination of Lande's 'g' factor of DPPH using Electron - Spin resonance (E.S.R.) Spectrometer.
15. X-ray diffraction by Telexometer.
16. Measurement of Hall coefficient of given semiconductor: Identification of type of semiconductor and estimation of charge carrier concentration.
17. Energy band gap of Ge Crystal.
18. Magnetic susceptibility by Gauy's method.
19. To determine the plateau characteristics of G.M. Counter and to find out the absorption coefficient foil absorber using B-Delay source.
20. Determination of range of Beta-rays from Ra and Cs.

CO No.	Course code (EP-705) : Engineering Physics Laboratory-I (General) After successfully completing the course, student will be able to:
CO-1	Hands on experience with different instruments and appreciate the beauty of different concepts and related experiments in Physics.
CO-2	Verify some fundamental principles, effects and concepts of physics through Experiments.
CO-3	Perform the experiments to determine the values of different parameters like 'e/m', ionization potential of lithium, thickness of a wire using Laser, resistivity, band gap and Hall's coefficient of a Semiconductor, thickness of thin films using Michelson interferometer, plateau characteristics of G.M. Counter etc.
CO-4	Learn to present observations, results and analysis in suitable and presentable form.

Reference Books:

Semiconductor Devices - Physics and Technology by S.M .Sze,Wiley (1985)

Measurement, Instrumentation and Experimental Design in Physics and Engineering

by M.Sayer and A. Mansingh, Prentice Hall, India (2000)

Optical electronics by Ajoy Ghatak and K. Thygarajan, Cambridge Univ. Press.

Laser and Non-linear optics by B.B.Laud. ,Wiley Eastern Limited (1985)

Principles of Condensed Matter Physics,P.M. Chaikin and T.C. Lubensky (Cambridge University Press, 1995)

Teaching laser physics by experiments, Am. J. Phys., (2011), http://doi.org/1-3488984

Radiation Detection and Measurement, G. F. Knoll (John Wiley & Sons, Inc. 3rd Ed.,2000)

Physics & Engineering of Radiation Detection, S. N. Ahmed (Academic Press 2007)

Techniques for Nuclear and Particle Physics Experiments, W.R. Leo (Springer- Verlag 1987)

M. Sc. Engineering Physics
Semester-VIII
Subject: Physics (Paper Code: EP 801)
Paper: Engineering Statistical Mechanics
No. of Credits: 4

Max. Marks: 100
Theory: 80
Internal Assessment: 20
Time: 3 hrs

Note:-

1 Nine Questions will be set in total
2 Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have five parts and the answer should be in brief but not in Yes/ No.
3 Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4 20% numerical problems are to be set.
5 Use of scientific (non-programmable) calculator is allowed.

Unit I

Phase space, Ensembles, Liouville theorem, conservation of extension, Equation of motion, Equal a priori probability, Statistical equilibrium, Microcanonical ensemble, Quantization of phase space, classical limit, symmetry of wave functions effect of symmetry on counting various distributions using micro canonical ensemble.

Unit II

Entropy of an ideal gas, Gibbs paradox, Sackur-Tetrode equation, Entropy of a system in contact with a reservoir, Ideal gas in a canonical ensemble, Grand canonical ensemble, Ideal gas in Grand Canonical ensemble, Comparison of various ensembles. Quantum distribution using other ensembles.

Unit III

Quantum-mechanical ensemble theory: Density matrix, Equation of motion for density matrix, Quantum-mechanical ensemble average; Statistics of indistinguishable particles, Two types of quantum statistics- Fermi-Dirac statistics and Bose-Einstein statistics, Fermi-Dirac and Bose-Einstein distribution functions using microcanonical and grand canonical ensembles (ideal gas only), Statistics of occupation numbers; Ideal Bose gas: Internal energy, Equation of state, Bose-Einstein Condensation and its critical conditions; Ideal Fermi gas: Internal energy, Equation of state, Completely degenerate Fermi gas.

Unit IV

Cluster expansion for a classical gas, virial equation of state, Van der Waals gas, Phase transition of second kind. Ising Model, Bragg Williams Approximation, Fowler Guggenheim Approximation, Ising Model in one and two dimensions, fluctuations in ensembles, Energy fluctuation in quantum statistics, Concentration fluctuation in quantum statistics, One dimensional random walk, Brownian motion.

CO No.	Course code (EP-801) : Engineering Statistical Mechanics After successfully completing the course, student will be able to:
CO-1	Appreciate cellular nature of phase space and interface of Statistical Mechanics with Thermodynamics.
CO-2	Have better Knowledge of ensemble theory which would result in greater insight into solutions of various complex problems.
CO-3	Analyse the peculiar gas behaviour and are in a position to extend the treatment to complex problems.
CO-4	Explore the applications of Ising Model and to understand different approximations.

Text and Reference Books

Statistical Mechanics by K Huang

Statistical Mechanics by B.K. Aggarwal and M.Eisner

Statistical Mechanics by R.K. Patharia

Statistical Mechanics by Donalad A Mc Quarrie

Elementary Statistical Mechanics by Gupta and Kumar

Statistical Mechanics R Kubo

Statistical Physics Landau and Lifshitz

M. Sc. Engineering Physics
Semester-VIII
Subject: Physics (Paper Code: EP 802)
Paper: Quantum Mechanics-II
No. of Credits: 4

Max. Marks: 100
Theory: 80
Internal Assessment: 20
Time: 3 hrs

Note:-

1 Nine Questions will be set in total
2 Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have five parts and the answer should be in brief but not in Yes/ No.
3 Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4 20% numerical problems are to be set.
5 Use of scientific (non-programmable) calculator is allowed.

Unit I

Variational methods

Ground state of Helium by both variational and perturbation methods; The hydrogen molecule; WKB approximation; Time dependent perturbation theory; Constant perturbation; Harmonic perturbation; Fermi's golden rule; Adiabatic and sudden approximation.

Unit II

Semi-classical theory of radiation

Transition probability for absorption and induced emission; Electric dipole transition and selection rules; Magnetic dipole transitions; Forbidden transitions; Higher order transitions; Einstein's coefficients.

Unit III

Collision in 3D and scattering

Laboratory and C.M. reference frames; scattering amplitude; Differential scattering cross section and total scattering cross section; The optical theorem; Scattering by spherically symmetric potentials; Partial waves and phase shifts; Scattering by a perfectly rigid sphere and by square well potential; Complex potential and absorption; The Born approximation.

Unit IV

Identical particles

The principle of indistinguishability**;** Symmetric and antisymmetric wave functions; Spin and statistics of identical particles; The Slater determinant; The Pauli exclusion principle; Spin states of a two electron system; States of the helium atom; Collision of identical particles-scattering of two spinless boson, scattering of two identical fermions of spin half.

Relativistic Quantum Mechanics

Introduction, Klein-Gordan (KG) and Dirac's relativistic equation, free particle wavefunction, conservation of angular momentum.

CO No.	Course code (EP-802) : Quantum Mechanics-II After successfully completing the course, student will be able to:
CO-1	Understand and apply the variational and approximation methods to study the ground state of Helium and hydrogen molecule.
CO-2	Analyse various transitions and their selection rules which are useful for research in many areas of Physics.
CO-3	Have better understanding about the collision in 3-dimension and scattering problems in physics.
CO-4	Grasp the basic knowledge about the spin, statistics and collision of identical particles and be capable to calculate spin states of two electron systems.

Text and Reference Books:

Quantum Mechanics by Ghatak and Loknathan

Quantum Mechanics by Powell and Crassman

Quantum Mechanics by S.Gasiorowicz

Quantum Mechanics by A.P.Messiah

Modern Quantum Mechanics by J.J. Sakurai

Quantum Mechanics by L.I..Schiff

Quantum Mechanics by Mathews and Venkatensan.

M. Sc. Engineering Physics
Semester-VIII
Subject: Physics (Paper Code: EP 803)
Paper: Nuclear Engineering Physics
No. of Credits: 4

Max. Marks: 100
Theory: 80
Internal Assessment: 20
Time: 3 hrs.

Note:-

1 Nine Questions will be set in total
2 Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have five parts and the answer should be in brief but not in Yes/ No.
3 Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4 20% numerical problems are to be set.
5 Use of scientific (non-programmable) calculator is allowed.

Unit I

Two nucleon problem and nuclear forces

The deuteron: binding energy, dipole moment quadrupole moment and the evidence of non-central (Tensor) force, spin dependence of nuclear force. Nucleon-nucleon scattering; s-wave effective range theory, charge independence and charge symmetry of nuclear forces, iso-spin formalism.

Unit II

Nuclear Models

Liquid drop model, stability of nuclei, fission; evidence of shell structure, the shell model spin parity and magnetic moment in extreme single particle model.

Nuclear decays

Alpha, Beta and Gamma decays, Selections rules, Fermi's theory of beta decay, selection rules, comparative half lines, Kurie plot Fermi and Gamow –Teller Transitions; parity non-conservation in beta decay.

Unit III

Gas-filled detectors: Proportional counters, Gas multiplication factor, space charge effects, energy resolution. Position-sensitive proportional counters.

Semiconductor detector in X-ray, gamma-ray Spectroscopy, Ge and Si(Li) detectors, Charge production and collection process.

Electronics associated with detectors: Electronic shielding and grounding, Measurement and control, Signal conditioning and recovery. Electronics for pulse signal processing, preamplifiers (voltage and charge-sensitive configurations), Linear amplifiers, CR-$(RC)^n$ and delay-line pulse shaping.

Unit IV

Elementary Particle

Basic interactions in nature: Gravitational Electromagnetic, weak and strong, classification of elementary particles, Leptons, Hadrons, Mesons, Baryons. Conservation Laws for Elementary Particles. Baryon, Lepton and Muon number, Strangeness and Hypercharge, Gelleman - Nishijima formula. Quark model, SU (2) and SU (3) Symmetries Parities of subatomic particles, charge conjugation.

Detector systems for high energy experiments (brief account): Collider physics, Particle Accelerators, Secondary beams, Beam transport, Modern Hybrid experiments - CMS and ALICE.

CO No.	Course code (EP-803) : Nuclear Engineering Physics After successfully completing the course, student will be able to:
CO-1	Familiar with the Nucleon-nucleon scattering & the nature of nuclear forces.
CO-2	Have basic idea about the liquid drop model and nuclear shell model and be able to findout spin, parity, magnetic moments etc. of different nuclei.
CO-3	Grasp the knowledge about various nuclear decays.
CO-4	Have better understanding of basic interactions in nature and classification of elementary particles. A student will also be able to apply the various conservation laws and Quark model to understand the different aspects of elementary particle physics.

Text and Reference Books :

A. Bohr and B.R. Mottelson, Nuclear Structure, Vol. 1(1969) and Vol. 2 (1975),

Benjamin, Reading A, 1975

Kenneth S. Krane, Introductory Nuclear Physics, Wiley, New York, 1988

Ghoshal, S.N Atomic and Nuclear Physics Vol. 2.

P.H. Perkins, Introduction to High Energy Physics, Addison-Wesley, London, 1982

A Preston and A Bhaduri : Nuclear Physics

H. Frauenfelder and E. Henley : Subatomic Physics

Radiation detection and measurement: G.F. Knoll (Wiley, New York) (2000).

M. Sc. Engineering Physics
Semester-VIII
Subject: Physics (Paper Code: EP 804)
Paper: Spectroscopy of Atoms and Molecules
No. of Credits: 4

Max. Marks: 100
Theory: 80
Internal Assessment: 20
Time: 3 hrs

Note:-

1 Nine Questions will be set in total
2 Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have five parts and the answer should be in brief but not in Yes/ No.
3 Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4 20% numerical problems are to be set.
5 Use of scientific (non-programmable) calculator is allowed.

Unit I

One Electron systems

Quantum mechanical results of hydrogen atom, Atomic spectra of Hydrogen, Quantum numbers and their role, atomic orbitals, orbital and spin angular momenta., spin orbit interaction, vector atom model, spectroscopic terms and their notations, Fine structure in hydrogen energy levels, spectra of alkali elements, different series in alkali spectra, the doublet fine structure.

Spectra of two electrons systems and Pauli Principle

Coupling scheme, L-S and j-j coupling, Building up principle: the Aufbau principle, Equivalent and non-equivalent electrons: Pauli's exclusion principle, Hund's rules, spectral terms, Breit's scheme.

Unit II

Atoms in external fields

Two electron system Hyperfine structure and Line broadening: Normal and anomalous Zeeman effect, Paschen Back effect, Stark effect, Two electron systems , interaction energy in LS and jj coupling, Hyperfine structure (magnetic and electric, only qualitative).

Unit III

Rotation of molecules

Classification of molecules, Interaction of radiation with rotating molecules, Rotational spectra of rigid diatomic molecules, Isotope effect in rotational spectra, Intensity of rotational lines, Non Rigid rotator.

Vibrational and Rotational Vibration spectra of Diatomic molecules

Vibrational energy of diatomic molecule, Diatomic molecules as a simple harmonic oscillator, Energy levels and spectrum, Morse potential energy curve, Molecules as vibrating rotator, vibration spectrum of diatomic molecules, PQR Branches.

Unit IV

Raman Spectroscopy

Introduction, Pure rotational Raman spectra, Vibrational Raman spectra, nuclear spin and intensity alternation in Raman spectra, isotope effect, Raman techniques and instrumentation.

Mossbauer spectroscopy

Recoilless emission and absorption, isomer shift, quadrupole interaction, magnetic hyperfine interaction, Experimental techniques.

CO No.	Course code (EP-804) : Spectroscopy of Atoms and Molecules After successfully completing the course, student will be able to:
CO-1	Understand and explain the atomic spectra of one and two electron atoms.
CO-2	Explain the influence on the spectra of atoms in the presence of external applied electric and magnetic field.
CO-3	Have basic idea about the rotational, vibrational and rotational-vibrational spectra of diatomic molecules.
CO-4	Describe the basic principle and instrumentation of Raman spectroscopy Mossbauer spectroscopy.

Text and Reference Books :

Introduction to Atomic and Molecular Spectroscopy by V.K.Jain

Introduction to Atomic spectra by H.E. White

Fundamentals of molecular spectroscopy by C.B. Banwell

Spectroscopy Vol I and II by Walker and Straughen

Introduction to Molecular spectroscopy by G. M. Barrow

Spectra of diatomic molecules by Herzberg

Molecular spectroscopy by Jeanne . L. McHale

Molecular spectroscopy by J.M. Brown

Spectra of atoms and molecules by P. F. Bemath

Modern spectroscopy by J.M. Holias

Molecular Structure and Spectroscopy by G. Aruldhas.

M. Sc. Engineering Physics
Semester-VIII
Subject: Physics (Paper Code: EP 805)
Paper: Engineering Physics Laboratory-II (Electronics)
Credits: 4

Max. Marks: 150
Time: 4 hrs

Special Note: -

1.Do any eight experiments from the given list of experiments.
2. Each student will deliver one seminar of about 40minutes duration to be conducted once a week during the laboratory hrs.
3.The Practical examination will be held in a single session of 4 hours.

Distribution of Marks:

Experiment	50 marks
Viva- voce	30 marks
Lab Record	20 marks
Seminar	50 Marks
Total	150 marks

List of Experiments:

1. Study of Network theorems.
2. Study of Rectifiers and filter circuits.
3. Zener diode as voltage regulator.
4. Clipping and clamping circuits.
5. Experiments on FET and MOSFET characteristics and application as an amplifier.
6. Experiment on Uni-junction Transistor and its application.
7. Transistor I-V Characteristics.
8. Transistor Biasing and Stability.
9. Common Emitter Transistor Amplifier.
10. Frequency response of RC coupled Amplifier.
11. Push Pull amplifier.
12. To study the frequency variation in R-C phase shift, Oscillator, Colpitt Oscillator and Hartley Oscillator.
13. Differentiating and integrating circuits.
14. Astable, Mono-stable and Bi-stable Multi-vibrater.
15. Characteristics of Solar Cell.
16. Study of (i) Low pass filter (ii) High pass filter (iii) All pass filter (iv) Band pass filter (v) Band reject filter
17. Characteristics and applications of Silicon Controller Rectifier.
18. Study of a Regulated Power Supply.
19. To measure (a) phase difference, (b) deflection sensitivity and (c) frequency of an unknown ac signal using CRO.
20. Design and performance study of a constant current source.

CO No.	Course code (EP-805) : Engineering Physics Laboratory-II (Electronics) After successfully completing the course, student will be able to:
CO-1	Learn circuit fundamentals, making of electrical connections and to solve the complex electrical circuits.
CO-2	Understand the behaviour of electronic components and perform analysis for diodes, transistors based electronic devices.
CO-3	Gain practical knowledge of designing, assembling, and testing electronic circuits and devices as well as understanding the troubleshooting.
CO-4	Learn to present observations, results and analysis in suitable and presentable form.

Reference Books :

Semiconductor Devices - Physics and Technology by S.M .Sze ,Wiley (1985)

Introduction to Semiconductor Devices by M.S. Tyagi, John Wiley & Sons

Measurement, Instrumentation and Experimental Design in Physics and Engineering

by M.Sayer and A. Mansingh, Prentice Hall, India (2000)

Optical electronics by Ajoy Ghatak and K. Thygarajan, Cambridge Univ. Press.

Semiconductor Electronics by A.K.Sharma ,New Age International Publisher(1996)

Electronic fundamentals and applications (5th ed.) by J. D. Ryder

Integrated Electronics by J. Millman and C. C. Halkias

Network analysis by Van Valkenburg

Electronic devices and circuits by Y. N. Bapat

M. Sc. Engineering Physics
Semester-IX
Subject: Physics (Paper Code: EP-901)
Paper: Solid State Engineering Physics
No. of Credits: 4

Max. Marks: 100
Theory: 80
Internal Assessment: 20
Time: 3 hrs

Note:-

1. Nine Questions will be set in total
2. Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have five parts and the answer should be in brief but not in Yes/ No.
3. Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4. 20% numerical problems are to be set.
5. Use of scientific (non-programmable) calculator is allowed.

Unit I

Crystalline solids, lattice, the basis, lattice translation, vectors, direct lattice, two and three dimensional Bravais lattice, conventional units cells of FCC, BCC, Nacl, CsCl, Diamond and cubic ZnS, primitive lattice cell of FCC, BCC and HCP; closed packed structures: packing fraction of simple cubic, bcc, fcc, hcp and diamond structures.

Interaction of x-rays with matter, absorption of x-rays, X-ray diffraction & interpretation of Bragg's equation, Ewald's construction, reciprical lattice- reciprocal lattice to SC, BCC and FCC lattices, the X-ray diffraction, the Laue, powder and rotating crystal methods.

Unit-II

Vibration of one dimensional mono- and diatomic- chains, phonon momentum, density of normal modes in one and three dimensions, quantization of lattice vibrations, measurement of phonon dispersion using inelastic neutron scattering.

Point defects, line defects and planer (stacking) faults, Fundamental ideas of the role of dislocation in plastic deformation and crystal growth, the observation of imperfection in crystals, x-rays and electron microscopic techniques.

Unit III

Electron in periodic lattice, Bloch theorem Kronig-Penny model and band theory, classification of solids, effective mass, weak-binding method and its application to linear lattice, tight-binding method and its application to cubic bcc and fcc crystals, concepts of holes, Fermi surface : construction of Fermi surface in two- dimension, de Hass van alfen effect, cyclotron resonance, magneto-resistance.

Unit IV

Superconductivity, effect of magnetic field on superconductivity, Meissner effect, heat capacity, energy gap, micro-wave and infra-red properties, isotopic effect.

Thermodynamics of the superconductive transition, London equation, coherence length, BCS theory of superconductivity, Bose-Einstein condensation, Laser cooling, flux quantization in superconducting ring, duration of persistent currents, Type-I and type-II superconductors- vortex state, estimation of Hc1 and Hc2, Ginzburg-Landau theory, Josephon effect, superconductor tunneling- DC Josephson effect, AC Josephson effect and Macroscopic quantum interference, Applications of superconductivity.

CO No.	**Course code (EP-901) : Solid State Engineering Physics** **After successfully completing the course, student will be able to:**
CO-1	Have basic idea about crystalline and amorphous substances, about lattice, unit cell, miller indices, reciprocal lattice, and interpretation of Bragg's equation and also be able to explain the X-ray diffraction, the Laue, powder and rotating crystal methods.
CO-2	Understand dynamics of lattice vibration. The students will also be able to understand and explain the influence of imperfections in solids upon the different properties of solids.
CO-3	Explain motion of electron in periodic lattice of solids under different binding conditions, concept of energy band and effect of same on electrical properties.
CO-4	Understand the BCS theory of superconductivity and have basic idea about superconductors, their classifications and applications in diverse fields of science & technology.

Text and Reference Books :

Verma and Srivastava : Crystallography for Solid State Physics

Azaroff : Introduction to Solids

Omar : Elementary Solid State Physics

Aschroft & Mermin : Solid State Physics

Kittel : Solid State Physics

Chaikin and Lubensky : Principles of Condensed Matter Physics

H. M. Rosenberg : The solid State.

Rajnikant; Solid State Physics, Willey India, 2011.

M. Sc. Engineering Physics
Semester-IX
Subject: Physics (Paper Code: EP-902)
Paper: Electrodynamics and wave propagation Engineering
No. of Credits: 4

Max. Marks: 100
Theory: 80
Internal Assessment: 20
Time: 3 hrs

Note:-

1 Nine Questions will be set in total
2 Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have five parts and the answer should be in brief but not in Yes/ No.
3 Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4 20% numerical problems are to be set.
5 Use of scientific (non-programmable) calculator is allowed.

Unit I

Time Varying Fields and Maxwell Equations

Faraday's Law of induction. displacement current. Maxwell equations. Scalar and vector potentials. Gauge transformation, Lorentz and Coulomb gauges, General Expression for the electromagnetic fields energy, conservation of energy, Poynting's Theorm. Conservation of momentum, time-Harmonic Fields.

Unit-II

Electromagnetic Wave Propagation

Wave equation, plane waves in free space and isotropic dielectrics, polarization, energy transmitted by a plane wave, waves in conducting media. Skin depth. Reflection and Refraction of EM waves at plane interface, Fresnel's amplitude relations. Propagation of electromagnetic wave through ionosphere; Reflection of electromagnetic waves by ionosphere.

Unit III

Waveguides and Resonant Cavities:

Field at the surface of and within a conductor, Cylindrical cavities and waveguides, Waveguides, modes in a rectangular waveguide, Energy flow and attenuation in waveguides, Perturbation of boundary conditions, Resonant cavities, Power losses in a cavity: Q of a cavity, Multimode propagation in optical fibers, Expansion in normal modes; Field generated by a localized source in a hollow metallic Guide.

Unit-IV

Electromagnetic radiations

Retarded potentials, Radiation from an oscillating dipole, Linear antenna, Lienard-Wiechert potentials, potentials for a charge in uniform motion-Lorentz formula, Fields of an accelerated charge, Radiation from an accelerated charged particle at low velocity, radiation when the velocity and acceleration of the particles are collinear, radiation from a charged particle moving in a circular orbit, Electric Quadrupole radiation.

CO No.	Course code (EP-902) : Electrodynamics and wave propagation Engineering After successfully completing the course, student will be able to:
CO-1	Use Maxwell equations in analysing the nature of electromagnetic field due to time varying charge and current distribution.
CO-2	Describe the nature of electromagnetic wave and its propagation through different media and interfaces involved in different situations.
CO-3	Analyze the basics of theory of transmission lines and waveguides.
CO-4	Simplify charged particle dynamics and radiation from localized time varying electromagnetic sources.

Text and Reference Books :

Classical Electrodynamics by J.D. Jackson

Introduction to Electrodynamics by D.J. Griffiths

Electromagnetic by B.B. Laud

Field and Wave Electromagnetics by D. K. Cheng

Classical Electricity and Magnetism by Panofsky and Phillips

Fundamentals of Electromagnetics by M.A. Wazed Miah

M. Sc. Engineering Physics
Semester-IX
Subject: Physics (Paper Code: EP 903)
Paper: Laser systems and Basics of Fiber optics Technology
No. of Credits: 4

Max. Marks: 100
Theory: 80
Internal Assessment: 20
Time: 3 hrs

Note:-.

1 Nine Questions will be set in total

2 Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have five parts and the answer should be in brief but not in Yes/ No.

3 Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.

Unit I

Laser: Laser characteristics, Spontaneous and Stimulated Emission, Absorption, population inversion, Laser pumping and pumping process: A two level system, a three level system, Optical pumping & pumping efficiency, Electrical pumping and pumping efficiency, Passive Optical Resonators, Rate Equations, Four-level Laser, Three-level Laser, Methods of Q-switching: Electro optical shutter, mechanical shutter.

Unit II

Laser systems: General description-Laser structure-excitation mechanism-Different laser systems- He-Ne laser, Argon-ion laser, Nitrogen laser, Carbon-dioxide laser, Nd:YAG; Nd:Glass, Pulsed-CW dye laser, Semiconductor Laser.

Applications of Lasers: Laser induced fusion, application in material procession (laser welding, hole drilling, laser cutting), lasers in Medicine & Military.

Holography Introduction, recording and reconstruction process, applications, holographic Interferometry, holographic memories.

Unit III

Fiber optics: Introduction; step index fiber, numerical aperture, pulse dispersion in step index fiber, graded index fibers, material dispersion, single mode fibers, fiber optics sensors; multimode and single mode fiber sensors.

Fiber materials and manufacture, glass fiber, plastic fiber, losses of fibers, bending losses, intrinsic fiber losses, scattering losses and absorption losses.

Unit IV

Optical Communication Systems: (Qualitative study only)

Modulation schemes, analog modulation, digital modulation, free space communication, fiber optical communication system, operating wave length, local area networks, integrated optics, slab and strip waveguides, devices, emitters (sources) and detectors (Qualitative idea only).

CO No.	Course code (EP-903) : Laser systems and Basics of Fiber optics Technology After successfully completing the course, student will be able to:
CO-1	Understand and explain the characteristics of lasers and basics concept like population inversion, laser pumping & pumping processes etc.
CO-2	Describe the basic principle, working and applications of most of the commercially available lasers.
CO-3	Have better understanding about the fibers & fiber optics technology.
CO-4	Have qualitative idea and basic understanding about the optical communication systems.

Text and Reference Books :

Optics-Azoy Ghatak, TMH Pub. Co.
Principles of Lasers by Svelto
Optical Electronics-Ajoy Ghatak and K. Thyagarajan, Cambridge Uty Press
Lasers and Non-linear Optics by B.B. Laud.
Lasers Theory and Applications- K. Thyagarajan and A.K. Ghatak
Optoelectronics an introduction- J. Wilson and J.F.W. Halkes , Printice hall of India.
High Power Lasers and Their Applications- Dr. M. Premasundern ,Law and commercial Publishers, New Delhi.

M. Sc. Engineering Physics
Semester-IX
Subject: Physics (Paper Code: EP 904A)
Paper: Advance Engineering Electronics-I
No. of Credits: 4

Max. Marks: 100
Theory: 80
Internal Assessment: 20
Time: 3 hrs

Note:-

1 Nine Questions will be set in total
2 Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have five parts and the answer should be in brief but not in Yes/ No.
3 Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4 20% numerical problems are to be set.
5 Use of scientific (non-programmable) calculator is allowed.

Unit I

OPERATIONAL AMPLIFIERS

The basic Operational-Amplifier: Ideal Op-Amp, block diagram of Op. Amp, Practical Inverting & Noninverting Op-Amp; Differential amplifier: CMRR, circuit configuration, Emitter-coupled differential amplifier, Differential amplifier supplied with constant current, transfer characteristics of a differential amplifier; Off-set Error currents and voltages: Input bias current, Input offset current, input offset drift, input offset voltage, input offset voltage drift, output offset voltage, PSRR, Slew rate; Universal balancing techniques;

Inverting and non-inverting Op-Amp's basic applications: Sign changer or inverter, Scale changer, Phase changer, Adder or Summing operation, current to voltage & voltage to current signal conversion, differential dc amplifier, voltage follower, analog integrator & differentiator, Electronic analog computation, Logarithmic & antilogarithmic amplifier, Waveform generator-square wave generator (astable multivibrator), Pulse generator (monostable multivibrator) & Triangular wave generator.

Unit II

DIGITAL CIRCUITS

Binary numbers, Octal numbers, Hexadecimal numbers, Inter-conversions of numbers. Binary addition, subtraction, multiplication, division, Hexadecimal addition, subtraction , Octal addition, subtraction signed numbers, 1's complement arithmetic, 2's complement arithmetic,

Digital (Binary) operation of a system; Logic system: DC Positive and negative logic designations, Positive and negative pulse logic; The OR gate & The AND gate: Circuit in Diode

logic (DL), Boolean expression, truth table, Boolean Identities; The NOT gate: Boolean expression, truth table, Boolean Identities, Transistor logic circuit; The NAND gate & The NOR gate: Diode Transistor logic circuit, Boolean expression, truth table, Boolean Identities; The Exclusive OR gate: Boolean notation, truth table and two logic block diagrams for XOR gate; DeMorgan's Laws & Boolean algebra.

Unit III

COMBINATIONAL DIGITAL SYSTEMS

Binary adders: Half adders, full adders, MSI adder, serial operation; Arithmetic functions; True/complement, Zero/one element, Binary subtraction, Digital comparator, parity checker/generator; Decoder: Binary-coded-decimal (BCD) system, BCD-to-decimal decoder, Demultiplexer: 4-to-16 line decoder, decoder/lamp driver, Multiplexer (Data selector): Applications- Parallel to serial conversion, sequential data selection; Encoders; Read Only Memory (ROM): Conversion of Binary to a Gray code & Gray to Binary conversion, ROM applications- Look-up table, sequence generator, seven segment visible display, combinational logic & character generator.

Unit IV

SEQUENTIAL DIGITAL SYSTEMS

A 1-BIT Memory: A sequential system, A 1-BIT storage cell, The clocked S-R Flip-Flop; Flip-Flops: The JK flip Flop- Logic symbol, truth table, preset and clear & race-around condition , Master slave JK flip-flop: T-type & D-type flip flops – Logic symbols and truth table; Shift-register and applications-serial to parallel converter, series in series out register, Parallel to serial converter, Parallel in Parallel out , Right shift, left shift register, digital delay line, sequence generators, shift-Register as ring counter, twisted-ring counter; Ripple (Asynchronous) counters: Ripple counter, Up-down counter, Divide by N counter; Synchronous counters: series carry, parallel carry, Applications of counters: Direct counting, Divide the frequency by N, measurement of frequency, time, distance & speed, wave form generator.

D/A and A/D Systems

Digital to analog converters: Weighted resistor type D/A converter, Ladder type D/A converter; Analog to Digital converter.

CO No.	Course code (EP-904A) : Advance Engineering Electronics-I After successfully completing the course, student will be able to:
CO-1	Realize the basics characteristics, circuit analysis and implementation of operational amplifier for various applications like addition, subtraction, differentiation, integration, Electronic analog computation, Logarithmic & antilogarithmic amplifier, Waveform generator-square wave generator, comparator, A/D & D/A convertor etc.
CO-2	Familiar with digital logic circuits Boolean expressions, De-Morgan's Laws & Boolean algebra. The students will also be able to implement Boolean expression with basic gates and design circuits to achieve desired output.
CO-3	Understand and explain about the various Combinational digital systems like Half adders, full adders, BCD-to-decimal decoder, Demultiplexer, Multiplexer, Read Only Memory (ROM) etc. and also be able to appreciate the applications of these devices.
CO-4	Describe the working and applications of various Sequential Digital Systems like S-R Flip-Flop, The JK flip Flop, Master slave JK flip-flop, T-type & D-type flip flops, shift-Registers and counters etc.

Text and Reference Books

Integrated Electronics by J. Millman and C.C.Halkias (Tata-McGraw Hill)
Fundamental of Electronics by J.D.Ryder (Prentice Hall Publication).
Linear Integrated Circuits by D.Roy Choudhury and Shail Jain (Wiley Eastern Ltd)

M. Sc. Engineering Physics
Semester-IX
Subject: Physics (Paper Code: EP 904B)
Paper: Radiation Physics-I
No. of Credits: 4

Max. Marks: 100
Theory: 80
Internal Assessment: 20
Time: 3 hrs

Note:-

1 Nine Questions will be set in total
2 Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have five parts and the answer should be in brief but not in Yes/ No.
3 Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4 20% numerical problems are to be set.
5 Use of scientific (non-programmable) calculator is allowed.

Unit I

The Nucleus and Radioactivity

Atomic structure, Nuclear mass, Binding energy, binding energy curve and its interpretation, Isotopes, Isotones, Isobars, Nuclear size, Radioactivity, Modes of radioactive disintegration, Nature and properties of radioactive radiations, Radioactive decay, Half life time, Radioactive growth and decay, Radioactive equilibrium, Radioactive series, Radioactive branching, Radioactive dating, Artificial radioactivity, and Uses of radio-isotopes

Unit II

Other Sources of Radiations

X-rays: Characteristic X-rays, Bremsstrahlung (continuous) X-rays, X ray targets, and Clinical X ray beams; Cosmic rays: Discovery, Nature of a cosmic rays, soft and hard component, and Geometric effects on cosmic rays; Terrestrial radiations: Radon gas and Radioactive isotopes of lighter elements, Radiation quantities and units: Activity, KERMA, Exposure, Dose, Equivalent Dose, Effective Dose, Annual Limit on Intake (ALI), and Derived Air Concentration (DAC)

Unit III

Interaction of Radiation with Matter

Modes of interaction: ionization, excitation, elastic and inelastic scattering, Bremsstrahlung, Cerenkov radiation, concepts of specific ionization, mean free path; Interaction of Light Charged Particles with matter; Interaction of Heavy Charged Particles with matter; Interaction of Electromagnetic Radiations with matter: Photoelectric effect, Compton Scattering, and Pair production; Attenuation of Gamma Radiation: Linear and mass attenuation coefficient

Unit IV

Neutron Physics: Discovery of neutrons, Neutron sources, Neutron collimators, Properties of neutrons, Classification of neutrons according to energy, Neutron detectors: Slow neutron detectors (Boron trifluride proportional counter, Boron coated proportional counter, Helium-3 proportional counter, Fission counter, and Scintillation counters), Intermediate neutrons detectors, and Fast neutrons detectors, Neutron detection through slowing down of fast neutrons. Neutron monochromators, and nuclear fission

CO No.	**Course code (EP-904B) : Radiation Physics-I** **After successfully completing the course, student will be able to:**
CO-1	Explain radioactivity and uses of radio-isotopes.
CO-2	Understand and explain radiation quantities and units.
CO-3	Explain the interaction of radiation with matter
CO-4	Better Understanding about the Neutron Physics.

Text & Reference Books:

1. Nulcear and Particle Physics by S. L. Kakani and ShubhraKakani
2. Radiation Oncology Physics: a handbook for teachers and students; International Atomic Energy Agency Vienna, 2005
3. Practical knowledge for Handling Radioactive Sources by Dr. Claus Grupen
4. Introduction to Radiological Physics and Radiation Dosimetry by Frank Herbert Attlx

M. Sc. Engineering Physics
Semester-IX
Subject: Physics, Paper Code: EP-905(A)
Paper: Advance Engineering Electronics Laboratory
No. of Credits: 4

Max. Marks: 100
Time: 4 hrs

Special Note: -

1.Do any eight experiments from given list of experiments.
2.The Practical examination will be held in single session of 4 hours.

Distribution of Marks:

Experiment	50 marks
Viva- voce	30 marks
Lab Record	20 marks
Total	100 marks

List of Experiments

1. Linear characteristics of Operational amplifier.
2. Non-linear characteristics of Operational amplifier.
3. To study the use of operational amplifier for different mathematical operations.
4. Differential Amplifier.
5. Active filters using Operational amplifier.
6. Differentiating and integrating circuits using OP-AMP.
7. To study Schmitt Trigger using transistor and OP-AMP.
8. To study SR and JK flip flop circuits using logic gates.
9. Study of Ripple Counters.
10. To study 4 bit Shift Register.
11. Sample and Hold circuit.
12. A/D and D/A conversion.
13. BCD to Seven segment display.
14. Basic Logic Gates, TTL, NAND and NOR.
15. Working of Half & Full Adders.
16. Working of Half & Full Subtractors.
17. To study the digital comparator, 3 to 8 line Decoder and tri-state digital O/P circuits.
18. To study analog voltage comparator circuit.
19. Pulse position/Pulse width Modulation.
20. Study of Frequency Modulation and Demodulation.
21. Study of Pulse Amplitude Modulations & Demodulation.

CO No.	Course code (EP-905A) : Advance Engineering Electronics Laboratory After successfully completing the course, student will be able to:
CO-1	Perform experiments to realize the applications of different analog and digital devices like Operational amplifier, basic logic gates, Flip-flops, shift register, counters, A/D & D/A convertors, Half & Full adders/Subtractors, digital and analog voltage comparators etc.
CO-2	Gain practical knowledge of Modulation and Demodulation process.
CO-3	Have in-depth knowledge about the electronic circuit fundamentals, making of electrical connections and to solve the complex electrical circuit networks.
CO-4	Learn to present observations, results and analysis in suitable and presentable form.

Reference Books:

Integrated Electronics by J. Millman and C.C.Halkias (Tata-McGraw Hill)
Fundamental of Electronics by J.D.Ryder (Prentice Hall Publication).
Linear Integrated Circuits by D.Roy Choudhury and Shail Jain (Wiley Eastern Ltd)

M. Sc. Engineering Physics
Semester-IX
Subject: Physics, Paper Code: EP-905(B)
Paper: Radiation Physics Laboratory
No. of Credits: 4

Max. Marks: 100
Time: 4 hrs

Special Note: -

1.Do any eight experiments from given list of experiments.
2.The Practical examination will be held in single session of 4 hours.

Distribution of Marks:

Experiment	50 marks
Viva- voce	30 marks
Lab Record	20 marks
Total	150 marks

List of Experiments

1. Investigation of the plateau and optimal operating voltage of a Geiger-Muller counter.
2. Investigation of statistical nature of counting rate.
3. To determine the resolving time of a GM counter.
4. Absorption of gamma-rays in material media at different energies.
5. To investigate the relationship between absorber materials (atomic number), absorption thickness and backscattering.
6. To verify the inverse square relationship between the distance and intensity of radiation.
7. To investigate the attenuation of radiation via the absorption of beta particles.
8. To determine the maximum energy of decay of a beta particle.
9. Measurement of range of α particle range in air using a spark counter.
10. Determination of detection efficiency of a Nal (TI) scintillation spectrometer.
11. Investigation of energy response and calibration of a Nal (TI) scintillation spectrometer based on Gamma-rays spectroscopy.
12. Study of the attenuation coefficients of the γ rays for Al, Fe and Pb using NaI scintillation counter.
13. Measurement of γ ray energy of Cs-137 source using a NaI Scintillation detector.
14. Gamma-rays spectroscopy using a single crystal HPGe detector : a) energy response, b) energy resolution and c) detection efficiency determination.
15. Proportional counter, its energy response and low energy X-ray measurements.

CO No.	Course code (EP-905B) : Radiation Physics Laboratory After successfully completing the course, student will be able to:
CO-1	Have hands on experience on GM counter, Spark Counter, Scintillation counter
CO-2	Measure range of alpha, beta particles, attenuation coefficient.
CO-3	Familiar with different techniques of detection of nuclear radiations.
CO-4	Appreciate the interaction of nuclear radiation with mater.

Reference Books:

Measurement, Instrumentation and Experimental Design in Physics and Engineering, M. Sayer and A. Mansingh (Prentice Hall India, 2010).

Radiation Detection and Measurement, G. F. Knoll (John Wiley & Sons, Inc. 3rd Ed.,2000)

Physics & Engineering of Radiation Detection, S. N. Ahmed (Academic Press 2007)

Techniques for Nuclear and Particle Physics Experiments, W.R. Leo (Springer- Verlag 1987)

Practical knowledge for Handling Radioactive Sources by Claus Grupen. Introduction to Radiological Physics and Radiation Dosimetry by Frank Herbert Attlx.

M. Sc. Engineering Physics
Semester-X
Subject: Physics (Paper Code: EP 1001)
Paper: Materials Science Engineering
No. of Credits: 4

Max. Marks: 100
Theory: 80
Internal Assessment: 20
Time: 3 hrs

Note:-

1 Nine Questions will be set in total
2 Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have five parts and the answer should be in brief but not in Yes/ No.
3 Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.

UNIT – I

CERAMICS AND COMPOSITES

Introduction, Structure of Ceramics, Production of ceramics other than glass and cement: Raw materials, forming process, post forming process; production of glass: melting of glass, glass forming and annealing; mechanical properties of ceramics; wear and erosion resistance; thermal shock; A commercial ceramic system: silica-alumina system; Technical ceramics: Zirconia and sialons; Cement and concrete; Composites; Mechanical properties of Continuous fiber composites: strength, Young's modulus; Mechanical properties of Discontinuous fiber composites; anisotropy; toughness; comparison of polymer, metal and ceramic matrix composites; some commercial composites: carbon-carbon and zirconia-toughened alumina, alumina reinforced aluminum alloys, polymer matrix composites.

Unit- II

Polymeric material

Introduction, molecular structure: Monomers and polymers, molecular weight, branching, tacticity and copolymers; Mechanics of flexible polymer chains: chain conformations, entanglements; Thermoplastic melts: viscosity, processing of thermoplastics; Amorphous polymers: The rubbery state, glass transition, time dependence; Crystallinity and orientation: Lamellae and spherulites, orientation; Thermosets and elastomers: thermosets, elastomers, thermoplastic elastomers; Mechanical properties: Stress-strain behaviour, crep recovery and stress relaxation, time-temperature correspondence, viscoelastic models, crack and craze growth, impact and fatigue; Physical and chemical properties: optical properties, electrical conductivity, density, diffusion, absorption and corrosion, degradation, oxidation and ageing; Speciality polymers: High – performance polymers, Liquid crystal polymers and functional polymers.

Unit – III

Nanomaterials; Introduction to Nanomaterials, Advances in Nanomaterials, Classification of Nanomaterials ; Zero, one , two and three dimensional nanostructures.

Different methods of preparation of Nanomaterials, Top down and Bottom up: Mechanical grinding, Wet Chemical Synthesis of Nanomaterials; Sol-gel process, Properties of Nanomaterials**:** Optical properties, Electrical properties, Mechanical properties, Magnetic properties, Selected Application of Nanomaterials, Disadvantages of Nanomaterials.

Unit – IV

Magnetic Materials

Classification of magnetism - Concept of magnetic domain structure - Soft magnetic materials: iron and iron based materials, permalloys, Ni_Zn and Mn_Zn ferrites - Microwave ferrites and garnets - Amorphous magnets (metglasses) - Hard magnetic materials: High carbon steel, AINiCo alloys - Structure and magnetic properties of Barium ferrites, Sm-co and Nd2Fe4B magnets - Rare earth element magnets - Effects of 3d transition elements – Applications of hard Vs Soft magnets.

CO No.	**Course code (EP-1001) : Materials Science Engineering**
	After successfully completing the course, student will be able to:
CO-1	Explain the types, structures, mechanical properties and different applications of ceramic and composite materials.
CO-2	Knowledge about the different types of polymers, their important properties and their applications in different scientific and technological fields.
CO-3	Have basic understanding about the classification, synthesis methods, important properties and applications of Nanomaterials.
CO-4	Explain the classification and applications of magnetic materials.

Text and Reference Books:

1. J.C. Anderson, KD. Leaver, R.D. Rawlings and J.M. Alexander, Materials Science, 4th Edition (ChapmanHall, London, 1990).

2. V. Raghavan, Materials Science and Engineering, 3rd Ed. (Prentice-Hall India, New Delhi, 1993). (For units 2, 3 & 5).47

3. C.M. Srivastava and C. Srinivasan Science of Engineering Materials, Wiley-Eastern Ltd., New Delhi, 1987). (For units 1, 2 & 5).

4. G.K. Narula, K.S. Narula and V.K. Gupta, Materials Science (Tata McGraw-Hill, 1988).

5. Z.D. Jaberezki, The Nature and Properties of Engineering Materials, (Wiley Eastern).

6. E.P. Wohlfarth, Ferromagnetic materials, Vols. 1, 2 & 3 (North rolland, 1980).

7. H. Ibach and H. Luth, Solid State Physics – An Introduction to Principles of Material Science, 2nd Ed. (2001).

8. R.K. Gupta (Editor), Physics of Particles, Nuclei and Materials - Recent Trends (New Horizons of Physics Series, Narosa, New Delhi, 2002).

M. Sc. Engineering Physics
Semester-X
Subject: Physics (Paper Code: EP 1002)
Paper: Modern Characterization techniques
No. of Credits: 4

Max. Marks: 100
Theory: 80
Internal Assessment: 20
Time: 3 hrs.

Note:-

1 Nine Questions will be set in total
2 Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have five parts and the answer should be in brief but not in Yes/ No.
3 Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.

Unit I

Electron Microscopy: introduction, Electron optics; Principle, instrumentation, methodology and applications of Scanning Electron Microscope (SEM), Transmission Electron Microscope (TEM) and Atomic Force Microscope (AFM).

Rutherford backscattering spectrometry (RBS): Principle, kinematics, instrumentation, depth profile and applications.

Elastic recoil detection analysis (ERDA): Principle, instrumentation, methodology and applications.

Unit - II

Auger Electron spectroscopy (AES): Principle, instrumentation, methodology and applications of AES in composition analysis and depth profiling;

X-ray photoelectron spectroscopy (XPS): principle, instrumentation, methodology and applications

Secondary ion mass spectroscopy (SIMS): Principle, instrumentation, working and application. Glancing angle X-ray diffraction: Basic concept, Instrumentation and structural analysis applications.

Unit - III

NMR: The principle of NMR, NMR spectrometer, Relaxation mechanisms, chemical shift; spin-spin coupling, applications of NMR spectroscopy.

ESR: ESR spectrometer, substances which can be studied by ESR, Resonance condition. Description of ESR by Precession, Relaxation mechanisms, Features of ESR spectra (a) Fine structure (b) hyperfine structure and applications of ESR.

Unit - IV

UV-Visible Spectroscopy: Introduction, instrumentation and applications.

Thermal analysis tools: TGA, DTA /DSC- Basic principle, instrumentation and applications.

FTIR spectroscopy: Basic concept, instrumentation, different mode of operation and applications.

Raman spectroscopy: introduction: Basic concept, instrumentation and applications.

CO No.	Course code (EP-1002) : Modern Characterization techniques After successfully completing the course, student will be able to:
CO-1	Explain the basic principle, working and applications of SEM, TEM, AFM, RBS & ERDA techniques in characterization of different materials.
CO-2	Describe the principle, working instrumentation and importance of AES, XPS and SIMS techniques in materials characterization.
CO-3	Have basic understanding about the Electron spin resonance and nuclear spin resonance spectroscopic techniques.
CO-4	Describe the working principle, instrumentation and applications of thermogravimetric analysis, UV-vis, Raman and FTIR spectroscopic techniques

References Books

1. Electron spectroscopy: theory, techniques and applications- C.R. Brundee and A.D. Baker Eds. Academic Press.

2. Fundamentals of surface and thin film analysis- L.C. Feldman and J.W. Mayer, North Holland.

3. Atomic and Nuclear Analytical Methods, H.R. Verma, Springer Berlin Heidelberg, New York.

4. Fundamentals of solid state engineering by Manijeh Razeghi, Springer.

5. Infrared and Raman Spectroscopy Edited by Bernhard Schrader, VCH Publishers. Inc., New York.

6. Modern Spectroscopy-J. Michael Hollas, Wiley publisher.

7. Thermal characterization of polymeric materials-E.A. Turi, Elsevier publisher.

8. Polymer characterization. Physical techniques- D. Campbell and J.R. White, Chapman and Hall.

M. Sc. Engineering Physics
Semester-X
Subject: Physics (Paper Code: EP 1003)
Paper: Modern Medical imaging systems
No. of Credits: 4

Max. Marks: 100
Theory: 80
Internal Assessment: 20
Time: 3 hrs.

Note:-

1 Nine Questions will be set in total
2 Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have five parts and the answer should be in brief but not in Yes/ No.
3 Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.

Unit I

X-ray Machine and digital Radiography: Basis of diagnostic radiology, Nature of X-rays, Properties of X-rays, units of X-radiation, Production of X-rays; stationary anode tube, collimators and grids, exposure timing systems, automated exposure control, Visualization of X-rays Machine; X-ray films, fluorescent screens, x-ray image intensifier television system.

X-ray computed tomography: Basic principle, Contrast Scale, System components- scanning system, processing system, viewing system; Patient dose in CT Scanners.

Unit-II

Ultrasonic imaging systems: Diagnostic ultrasound, Physics of ultrasonic waves-Characteristic impedance, wavelength and frequency, velocity of propagation, absorption of ultrasonic energy, beam width, resolution, generation and detection ultrasound; Medical ultrasound; Basic pulse echo apparatus; A scan- applications; B scanner- types of scan, imaging instrumentation; Biological effects of ultrasound.

Unit – III

Nuclear Magnetic imaging systems: Radio-isotopes in medical diagnosis; Physics of radioactivity: time decay of radioactive isotopes, units of radioactivity, types and properties of particles emitted in radioactive decay; The gamma camera-basic idea and it's electronics; emission computed tomography (ECT); Single-Photon-Emission computed tomography (SPECT); Position Emission tomography (PET scanner).

Unit – IV

Magnetic imaging system: Principles of NMR imaging system, Free induction decay (FID), Fourier Transformation of FID, The Bloch equation; Image reconstruction technique- Sequential point method, sequential line method, sequential plane method; Discrimination based on relaxation rates-saturation recovery, inversion recovery, spin-eco-imaging technique; Types of imaging sequences; Basic NMR components; Biological effects of NMR imaging system; Advantages of NMR imaging systems.

CO No.	**Course code (EP-1003) : Modern Medical Imaging Systems** **After successfully completing the course, student will be able to:**
CO-1	Understand the working of X-ray Machine and basics of diagnostic radiology.
CO-2	Understand the basic Physics involved, instrumentation and biological effects of Ultrasonic imaging systems.
CO-3	Have basic understanding about advanced medical diagnosis systems like Emission Computed Tomography (ECT); Single-Photon-Emission Computed Tomography (SPECT) and Position Emission Tomography (PET scanner).
CO-4	Describe the working principle, basic components, biological effects and advantages of NMR imaging system

Text and Reference Books:

1. Medical Instrumentation by John. G. Webster –John Wiley
2. Principles of Applied Biomedical Instrumentation by Goddes & Baker – John Wiley
3. Biomedical Instrumentation & Measurement by Carr & Brown-Pearson
4. Biomedical Instrument by Cromwell-Prentice Hall of India, New Delhi
5. Hand book of Medical instruments by R.S. Khandpur –TMH, New Delhi
6. Medical Electronics and Instrumentation by Sanjay Guha – University Publication
7. Introduction to Biomedical electronics by Edwand J. Bukstein –sane and Co. Inc. USA

M. Sc. Engineering Physics
Semester-X
Subject: Physics (Paper Code: EP 1004A)
Paper: Advance Engineering Electronics-II
No. of Credits: 4

Max. Marks: 100
Theory: 80
Internal Assessment: 20
Time: 3 hrs

Note:-

1 Nine Questions will be set in total
2 Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have five parts and the answer should be in brief but not in Yes/ No.
3 Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4 20% numerical problems are to be set.
5 Use of scientific (non-programmable) calculator is allowed.

Unit I

Amplifier models, feedback and biasing

Two port network analysis: active circuit models, gain in decibels, equivalent circuit for BJT, the transconductance model for BJT, analysis of CE, CB, and CC amplifiers; An amplifier with feedback, effect of negative feedback on gain and its stability, distortions, input and output impedances of amplifiers, Analysis of amplifiers with voltage series, voltage shunt, current series and current shunt negative feedbacks; Location of quiescent (Q) point, biasing circuits for amplifiers: fixed bias, emitter feedback bias & voltage feedback bias, bias sources for integrated circuits, Circuits for stabilization of Q-Point.

Unit II

Frequency response of amplifiers

Introduction, the amplifier pass band, mid-range response of CE cascade, the high frequency equivalent circuit (Miller effect), the high frequencies response, the frequency response of RC and transformer coupled CE amplifiers, gain-frequency plots of amplifier response, bandwidth of cascaded amplifiers, bandwidth criterion for the transistor, the gain-bandwidth product, composite amplifier designs, bootstrapping in amplifiers, noise in amplifiers, noise figure.

Unit III

Power amplifiers

Power amplifiers: class A large signal amplifiers, second and higher order harmonic distortions, the transformer coupled power amplifier, impedance matching, efficiency, push-pull amplifiers, class-B amplifiers, complementary stages, cross over distortions, class-AB operation, heat sinks, derating curve

Unit IV

Fundamentals Modulation and Demodulation

Fundamentals of modulation, Frequency spectra in AM modulation, power in AM modulated class C amplifier, Efficiency modulation, frequency conversion, SSB system, Balanced modulation, filtering the signal for SSB, phase shift method, product detector, Pulse modulation: PAM, PTM, PWM, PPM, PCM (in brief), Digital transmission and demodulation.

CO No.	Course code (EP-1004A) : Advance Engineering Electronics-II After successfully completing the course, student will be able to:
CO-1	Understand and explain the role of different biasing and feedback methods in BJT amplifiers.
CO-2	Understanding of frequency response of amplifiers and be able to apply this knowledge to the study of frequency response of amplifier in Laboratory.
CO-3	Describe the working of different types of Power Amplifiers and be able to perform experiments in laboratory related to power amplifiers.
CO-4	Understand and explain the fundamentals of Modulation and Demodulation.

Text and Reference Books

Integrated Electronics by J. Millman and C.C.Halkias (Tata-McGraw Hill)
Fundamental of Electronics by J.D.Ryder (Prentice Hall Publication).
Linear Integrated Circuits by D.Roy Choudhury and Shail Jain (Wiley Eastern Ltd)
Electronic devices and circuits by Y. N. Bapat
Pulse, digital and switching waveforms by J. Millman and H. Taub

M. Sc. Engineering Physics
Semester-X
Subject: Physics (Paper Code: EP 1004B)
Paper: Radiation Physics-II
No. of Credits: 4

Max. Marks: 100
Theory: 80
Internal Assessment: 20
Time: 3 hrs

Note:-

1 Nine Questions will be set in total
2 Question number 1 will be compulsory and will be based on the conceptual aspects of entire syllabus. This question may have five parts and the answer should be in brief but not in Yes/ No.
3 Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.
4 20% numerical problems are to be set.
5 Use of scientific (non-programmable) calculator is allowed.

Unit I

Principles of radiation detection

Gas filled radiation detectors: ionization chambers, proportion counters, GM counters, and Spark counter. Scintillation (organic/inorganic) counter; Solid State Detector: Crystal detector, Semiconductor Detectors (Junction type detector, Lithium drift Germanium detector, and HPGe), Thermo – Luminescent Dosimeters (TLD), Chemical detectors (Photographic Emulsions Films), Radiation Monitoring Instruments and Calibration check of radiation monitoring equipment.

Unit II

Biological Effects of Ionizing Radiation

Introduction, Cell Biology: Structure and function of living cell, cell division-mitosis, meiosis and differentiation, central dogma of molecular biology, genetic codes-DNA, RNA and Proteins; Effect of Radiation on Cell: inhibition of cell division, chromosome aberrations, genes mutation, and cell death; Biological effects of Radiation on Human: Somatic Effects (Early effect) and Stochastic effect (Late effect).

Unit III

Principles of Radiological Protection

Justification of Practice, Optimization of Practice, and Dose Limitations; Internal Exposure, Dose Limit for (i) Radiation Workers (ii) Public, Occupational Exposure of Women, Apprentices and Students. Production of Radioisotopes and Labeled Compounds: Introduction, Separation of Isotopes, Production of labeled compounds, Specific Activity of labeled compounds, Storage, Quality, and Purity of Radio-labeled compounds.

Unit IV

Radiation Hazard: Internal Hazards and External Hazards; Evaluation and Control of Radiation Hazard, Radiation Shield, Monitoring of External Radiation, Control of Internal Hazard: (i) Containment of Source (ii) Control of Environment (iii) Contamination (iv) Air Contamination Monitoring (v) Personal Contamination Monitoring (vi) Decontamination Procedures; Radiation Emergency and Preparedness.

CO No.	**Course code (EP-1004B) : Radiation Physics-II** **After successfully completing the course, student will be able to:**
CO-1	Understand and explain the working of radiation detectors.
CO-2	Have better understanding of biological effects of radiation.
CO-3	Have knowledge about the principles of Radiological Protection
CO-4	Have awareness about the radiation hazard's types, their control and radiation emergency and preparedness.

Text and Reference Books

Radiation Oncology Physics: a handbook for teachers and students; International Atomic Energy Agency Vienna, 2005.

Practical knowledge for Handling Radioactive Sources by Claus Grupen. Introduction to Radiological Physics and Radiation Dosimetry by Frank Herbert Attlx.

Radiation Biology: a handbook for teachers and students; International Atomic Energy Agency Vienna, 2010.

M. Sc. Engineering Physics
Semester-IX
Subject: Physics, Paper Code: EP-1005 (A)
Paper: Advance Engineering Physics Laboratory
No. of Credits: 4

Max. Marks: 150
Time: 4 hrs

Special Note: -

4.Do any eight experiments from the given list of experiments.
5.Each student will deliver one seminar of about 40minutes duration to be conducted once a week during the laboratory hrs.
6.The Practical examination will be held in single session of 4 hours.

Distribution of Marks:

Experiment	50 marks
Viva- voce	30 marks
Seminar	50 Marks
Lab Record	20 marks
Total	150 marks

List of Experiments

1. To determine magneto resistance of a Bismuth crystal as a function of magnetic field.
2. To study hysteresis in the electrical polarization of a TGS crystal and measure the Curie temperature.
3. To determine the band gap of Si material.
4. To study dielectric properties of liquids & Solids.
5. To study Hall Effect and to determine Hall coefficient.
6. To study of dielectric constant as a function of temperature and determine the Curie temperature.
7. To determine the Dielectric Constant of different solid samples.
8. Study of lead tin phase diagram.
9. To determine the capacitance of a parallel plate Capacitor using Capacitance and permittivity kit.
10. Determine the Curie temperature of a given ferroelectric material.
11. To study the piezoelectric properties of a given material.
12. Study of ferroelectricity using standard P-E loop measurement.
13. Measurement of Magneto-resistance of Semiconductors.
14. Measurement and analysis of FTIR/Raman spectrum of a given material.
15. Measurement and analysis of UV-visible spectrum of a given material.
16. Measurement and analysis of TG-DTG thermogram of a given material.
17. DSC/DTA analysis of a given material.
18. Lattice parameter and Miller Indices using XRD.
19. Determination of particle size and lattice strain using XRD.
20. SEM/TEM/AFM analysis of a given material.

CO No.	Course code (EP-1005A) : Advance Engineering Physics Laboratory After successfully completing the course, student will be able to:
CO-1	Perform experiments to determine resistance & band gap of semiconductor materials and to study the piezoelectric & ferroelectric properties of ferroelectric materials.
CO-2	Familiar with the material characterization techniques like TGA/DTA, SEM/TEM/AFM, FTIR, Raman and UV-visible spectroscopy.
CO-3	Adopt the skills related to research, education, and industry.
CO-4	Learn to present observations, results and analysis in suitable and presentable form.

Reference Books:

Solid State Physics by A. J. Dekker (Macmillan)

Introduction to Condensed Matter Physics By K.C. Barua (Narosa)

Principle of Electronic Materials and Devices by S. O. Kasap (Tata McGraw Hill)

Electronic Properties of Materials by Rolf E. Hummel (Springer)

Solid State Physics by Ashcroft &Mermin (Cengage Learning).

Introduction to Solid State Physics by Charles Kittel (Wiley).

Electron spectroscopy: theory, techniques and applications- C.R. Brundee and A.D. Baker Eds. Academic Press.

Infrared and Raman Spectroscopy Edited by Bernhard Schrader, VCH Publishers. Inc., New York.

Modern Spectroscopy-J. Michael Hollas, Wiley publisher.

Polymer characterization. Physical techniques- D. Campbell and J.R. White, Chapman and Hall.

Subject: Physics (Paper Code: EP – 1005B)
Paper: Project Work-Dissertation
No. of Credits: 2

Max. Marks: 150
Project: 100
Viva-Voce: 50

In the project, the student will explore new developments from books and journals, collecting literature / data and write a dissertation based on his / her work and studies. The project can also be based on experimental work.

CO No.	**Course code (EP-1005B) : Project Work-Dissertation** **After successfully completing the course, student will be able to:**
CO-1	Have adventures into preliminary research field both in theory and experiment.
CO-2	Learn about the synthesis methods of smart materials and their characterization using modern techniques like TGA/DTA, SEM/TEM/AFM, FTIR, Raman, UV-visible spectroscopy etc.
CO-3	Explore new developments by collecting literature/data from books and journals and be able to adopt the skills related to research, education, and industry.
CO-4	Learn to present observations, results and analysis in suitable and presentable form.

Open Elective-I
Subject: Physics (Paper Code: OE-EP806)
Paper: Weather Forecasting
No. of Credits: 2

Max. Marks: 50
Theory: 35
Internal Assessment: 15
Time: 1:30 hrs

Note:-

1 Five Questions will be set in total
2 Question number 1 will be compulsory and of 7marks; it will be based on the conceptual aspects of entire syllabus. This question may have 3-5 parts and the answer should be in brief but not in Yes/ No.
3 Two more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.

Unit I

Introduction to atmosphere

Elementary idea of atmosphere: physical structure and composition; compositional layering of the atmosphere; variation of pressure and temperature with height; air temperature; requirements to measure air temperature; temperature sensors: types; atmospheric pressure: its measurement; cyclones and anticyclones: its characteristics.

Measuring the weather

Wind; forces acting to produce wind; wind speed direction: units, its direction; measuring wind speed and direction; humidity, clouds and rainfall, radiation: absorption, emission and scattering in atmosphere; radiation laws.

Unit II

Climate and Climate Change

Climate: its classification; causes of climate change; global warming and its outcomes; air pollution; aerosols, ozone depletion, acid rain, environmental issues related to climate.

Basics of weather forecasting

Weather forecasting: analysis and its historical background; need of measuring weather; types of weather forecasting; weather forecasting methods; criteria of choosing weather station; basics of choosing site and exposure; satellites observations in weather forecasting; weather maps; uncertainty and predictability; probability forecasts.

CO No.	Course code (OE-EP806) : Weather Forecasting
	After successfully completing the course, student will be able to:

CO-1	Acquire basic knowledge of the elements of the atmosphere, its composition at various heights, variation of pressure and temperature with height.
CO-2	Learn basic techniques to measure temperature and its relation with cyclones and anti-cyclones.
CO-3	Acquire knowledge of simple techniques to measure wind speed and its directions, humidity & rainfall.
CO-4	Have awareness and understanding regarding the causes and effects of different weather phenomenon and basic forecasting techniques and appreciate the role of physics in understanding the concepts related to weather forecasting.

Reference Books:

Aviation Meteorology, I.C. Joshi, 3rd edition 2014, Himalayan Books

The weather Observers Hand book, Stephen Burt, 2012, Cambridge University Press.

Meteorology, S.R. Ghadekar, 2001, Agromet Publishers, Nagpur.

Text Book of Agrometeorology, S.R. Ghadekar, 2005, Agromet Publishers, Nagpur.

Why the weather, Charls Franklin Brooks, 1924, Chpraman & Hall, London.

Atmosphere and Ocean, John G. Harvey, 1995, The Artemis Press.

Open Elective-II
Subject: Physics (Paper Code: OE-EP906)
Paper: Medical Physics

No. of Credits: 2

Max. Marks: 50
Theory: 35
Internal Assessment: 15
Time: 1:30 hrs

Note:-

1 Five Questions will be set in total
2 Question number 1 will be compulsory and of 7marks; it will be based on the conceptual aspects of entire syllabus. This question may have 3-5 parts and the answer should be in brief but not in Yes/ No.
3 Two more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts. All questions will carry equal marks.

Unit I

Physics of the Body-I

Mechanics of the body: Skeleton, forces, and body stability. The Physics of Locomotors Systems: joints & movements, Stability & Equilibrium. Energy household of the body: Energy balance in the body, Energy consumption of the body, Heat losses of the body, Thermal Regulation. Pressure system of body: Physics of breathing, Physics of cardiovascular system.

Physics of the Body-II

Acoustics of the body: Nature and characteristics of sound, Production of speech, Physics of the ear, Diagnostics with sound and ultrasound. Optical system of the body: Physics of the eye. Electrical system of the body: Physics of the nervous system, Electrical signals and information transfer.

Unit II

Medical Imaging Physics

Physics of nuclear magnetic resonance (NMR), NMR imaging, MRI Radiological imaging, Computed tomography scanner- principle & function, display, generations, mammography. Thyroid uptake system and Gamma camera (Only Principle, function and display).

Diagnostic nuclear medicine

Radiopharmaceuticals for radioisotope imaging, Radioisotope imaging equipment, Single photon and positron emission tomography.

Medical Instrumentation

Basic Ideas of Endoscope and Cautery, Sleep Apnea and Cpap Machines, Ventilator and its modes.

CO	Course code (OE-EP906) : Medical Physics

No.	After successfully completing the course, student will be able to:
CO-1	Learn about the human body, its anatomy, physiology and biophysics, the Physics of the senses, exploring its performance as a physical machine.
CO-2	Gain knowledge with reference to working of various diagnostic tools, medical imaging techniques.
CO-3	Acquire a broad and fundamental understanding of Physics while developing particular expertise in medical applications.
CO-4	Appreciate the applications of Physics to clinical medicine.

Reference Books:

Medical Physics, J.R. Cameron and J.G. Skofronick, Wiley (1978)

Basic Radiological Physics Dr. K. Thayalan - Jayapee Brothers Medical Publishing Pvt. Ltd. New Delhi (2003).

Christensen's Physics of Diagnostic Radiology: Curry, Dowdey and Murry - Lippincot Williams and Wilkins (1990).

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KURUKSHETRA UNIVERSITY KURUKSHETRA

POs & PSOs

(7th to 10th semester)

for

Five Years Integrated
M. Sc. Engineering Physics (3 Years BSc+2Years M.Sc.)
Under CBCS-LOCF

(Effective from the Academic Session 2023-24)

Department of Physics

INSTITUTE OF INTEGRATED & HONORS STUDIES

Kurukshetra University

Kurukshetra - 136 119

Haryana (INDIA)

Program Outcomes (PO) for Post Graduate Programmes (M.Sc. Engineering Physics-7th to 10th semesters), Institute of Integrated & Honors Studies, KUK:

PO1	Knowledge	Capable of demonstrating comprehensive disciplinary knowledge gained during course of study
PO2	Research Aptitude	Capability to ask relevant/appropriate questions for identifying, formulating and analyzing the research problems and to draw conclusion from the analysis
PO3	Communication	Ability to communicate effectively on general and scientific topics with the scientific community and with society at large
PO4	Problem Solving	Capability of applying knowledge to solve scientific and other problems
PO5	Individual and Team Work	Capable to learn and work effectively as an individual, and as a member or leader in diverse teams, in multidisciplinary settings.
PO6	Investigation of Problems	Ability of critical thinking, analytical reasoning and research based knowledge including design of experiments, analysis and interpretation of data to provide conclusions
PO7	Modern Tool usage	Ability to use and learn techniques, skills and modern tools for scientific practices
PO8	Science and Society	Ability to apply reasoning to assess the different issues related to society and the consequent responsibilities relevant to the professional scientific practices
PO9	Life-Long Learning	Aptitude to apply knowledge and skills that are necessary for participating in learning activities throughout life
PO10	Ethics	Capability to identify and apply ethical issues related to one's work, avoid unethical behaviour such as fabrication of data, committing plagiarism and unbiased truthful actions in all aspects of work
PO11	Project Management	Ability to demonstrate knowledge and understanding of the scientific principles and apply these to manage projects

Programme Specific Outcomes (PSOs)

After successful completion of M. Sc. Engineering Physics programme, the students will

PSO1: Able to develop skills of critical thinking, hypothesis building and applying the scientific method of physics and engineering concepts, theoretical models and laboratory experiments to appreciate how diverse phenomena observed in nature follow from a small set of fundamental laws through logical and mathematical reasoning.

PSO2: Be capable of applying the core physical laws to understand the basic concepts, latest progress in the fields of Science & Technology.

PSO3: Gain hands-on skills for carrying out basic experiments as well as be able to grasp the understanding of basics principle and instrumentation of advance tools (The ornaments of present day science and technology) through the study of subjects like Engineering Electronics, Lasers and fiber optics technology, Modern Characterization techniques, Modern Medical Imaging systems, Materials Science engineering, Project work for synthesis, design and characterization of advance and smart materials etc.

PSO4: Develop problem solving skill for identifying and formulating problems independently and creatively employing the theoretical and/or experimental methods that he has acquired during the course

PSO5: Have a new perspective to look at everything from 'Physics' point of view that enabling them to work environment at industrial scale as well as at research level so that the students can successfully compete for current employment opportunities.

PSO6: Have awareness of the impact of Physics & Engineering in social, economical and environmental issues.

Mapping of CO with PO's and PSO's
Semester-VII

Course code EP-701																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	3	2	3	2	2	2	-	2	3	3	2	3	3	2
CO2	3	3	3	3	2	3	2	2	2	-	2	3	3	2	2	3	2
CO3	3	3	3	3	2	3	2	2	2	-	2	3	3	2	3	2	2
CO4	3	3	3	3	2	3	2	2	2	-	2	3	3	2	2	2	2
Average	3	3	3	3	2	3	2	2	2	-	2	3	3	2	2.50	2.50	2
Note: S-Strong, M-Medium, W-Weak																	

Course code EP-702																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	3	2	3	2	3	3	-	2	3	3	2	3	3	2
CO2	3	3	3	3	2	3	2	2	2	-	2	3	2	2	3	2	2
CO3	3	3	3	3	2	3	2	3	3	-	2	3	3	2	3	3	2
CO4	3	3	3	3	2	3	2	2	2	-	2	3	2	2	3	2	2
Average	3	3	3	3	2	3	2	2.50	2.50	-	2	3	2.50	2	3	2.50	2

Course code EP-703																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	3	2	3	2	3	2	-	2	3	3	2	3	3	2
CO2	3	3	3	3	2	3	2	3	2	-	2	3	3	2	3	2	2
CO3	3	3	3	3	2	3	2	3	2	-	2	3	3	2	3	3	2
CO4	3	3	3	3	2	3	2		2	-	2	3	3	2	3	2	2
Average	3	3	3	3	2	3	2	3	2	-	2	3	3	2	3	2.50	2

Course code EP-704																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	3	3	3	3	2	3	-	3	3	3	2	3	3	2
CO2	3	3	3	3	3	3	3	2	3	-	3	3	3	2	3	2	2
CO3	3	3	3	3	3	3	3	2	3	-	3	3	3	2	3	3	2
CO4	3	3	3	3	3	3	3	2	3	-	3	3	3	2	3	2	2
Average	3	3	3	3	3	3	3	2	3	-	3	3	3	2	3	2.50	2

Course code EP-705																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	3	3	3	3	2	3	-	3	3	3	2	3	3	2
CO2	3	3	3	3	3	3	3	2	3	-	3	3	3	2	3	2	2
CO3	3	3	3	3	3	3	3	2	3	-	3	3	3	2	3	3	2
CO4	3	3	3	3	3	3	3	2	3	-	3	3	3	2	3	2	2
Average	3	3	3	3	3	3	3	2	3	-	3	3	3	2	3	2.50	2

Mapping of CO with PO's and PSO's
Semester-VII

Course code EP-801																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	2	2	3	3	2	3	-	3	3	3	2	3	3	2
CO2	3	3	3	2	3	2	3	2	3	-	3	3	3	2	3	2	2
CO3	3	3	3	2	2	3	3	2	3	-	3	3	3	2	3	3	2
CO4	3	3	3	2	3	2	3	2	3	-	3	3	3	2	3	2	2
Average	3	3	3	2	2.50	2.50	3	2	3	-	3	3	3	2	3	2.50	2

Course code EP-802																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	3	2	3	2	2	3	-	2	3	3	2	3	3	2
CO2	3	3	3	3	2	2	2	2	3	-	2	3	3	2	3	2	2
CO3	3	3	3	3	2	3	2	2	3	-	2	3	3	2	3	3	2
CO4	3	3	3	3	2	2	2	2	3	-	2	3	3	2	3	2	2
Average	3	3	3	3	2	2.50	2	2	3	-	2	3	3	2	3	2.50	2

Course code EP-803																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	2	2	2	2	2	3	-	2	3	3	2	3	2	2
CO2	3	3	3	2	2	2	2	2	3	-	2	3	3	2	3	2	2
CO3	3	3	3	2	2	2	2	2	3	-	2	3	3	2	3	2	2
CO4	3	3	3	2	2	2	2	2	3	-	2	3	3	2	3	2	2
Average	3	3	3	2	2	2	2	2	3	-	2	3	3	2	3	2	2

Course code EP-804																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	3	2	2	3	2	3	-	2	3	3	2	3	2	2
CO2	3	3	3	3	2	2	3	2	3	-	2	3	3	2	3	2	2
CO3	3	3	3	3	2	2	3	2	3	-	2	3	3	2	3	2	2
CO4	3	3	3	3	2	2	3	2	3	-	2	3	3	2	3	2	2
Average	3	3	3	3	2	2	3	2	3	-	2	3	3	2	3	2	2

Course code EP-805																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	3	3	3	3	2	3	-	3	3	3	3	3	3	2
CO2	3	3	3	3	3	3	3	2	3	-	3	3	3	3	3	2	2
CO3	3	3	3	3	3	3	3	2	3	-	3	3	3	3	3	3	2
CO4	3	3	3	3	3	3	3	2	3	-	3	3	3	3	3	2	2
Average	3	3	3	3	3	3	3	2	3	-	3	3	3	3	3	2.50	2

Course code EP-901																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	2	3	3	2	2	3	-	2	3	3	2	3	2	2
CO2	3	3	3	2	3	3	2	2	3	-	2	3	3	2	3	2	2
CO3	3	3	3	2	3	3	2	2	3	-	2	3	3	2	3	2	2
CO4	3	3	3	2	3	3	2	2	3	-	2	3	3	2	3	2	2
Average	3	3	3	2	3	3	2	2	3	-	2	3	3	2	3	2	2

Course code EP-902																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	2	2	3	2	2	2	-	2	3	3	2	3	2	2
CO2	3	3	3	2	2	3	2	2	2	-	2	3	3	2	3	2	2
CO3	3	3	3	2	2	3	2	2	2	-	2	3	3	2	3	2	2
CO4	3	3	3	2	2	3	2	2	2	-	2	3	3	2	3	2	2
Average	3	3	3	2	2	3	2	2	2	-	2	3	3	2	3	2	2

Course code EP-903																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	3	2	3	3	3	3	-	2	3	3	2	3	2	2
CO2	3	3	3	3	2	3	3	3	3	-	2	3	3	2	3	2	2
CO3	3	3	3	3	2	3	3	3	3	-	2	3	3	2	3	2	2
CO4	3	3	3	3	2	3	3	3	3	-	2	3	3	2	3	2	2
Average	3	3	3	3	2	3	3	3	3	-	2	3	3	2	3	2	2

Course code EP-904A																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	3	2	3	3	3	3	-	2	3	3	3	3	2	2
CO2	3	3	3	3	2	3	3	3	3	-	2	3	3	3	3	2	2
CO3	3	3	3	3	2	3	3	3	3	-	2	3	3	3	3	2	2
CO4	3	3	3	3	2	3	3	3	3	-	2	3	3	3	3	2	2
Average	3	3	3	3	2	3	3	3	3	-	2	3	3	3	3	2	2

Course code EP-904B																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	2	2	3	2	3	3	-	2	3	2	2	3	2	2
CO2	3	3	3	2	2	3	2	3	3	-	2	3	2	2	3	2	2
CO3	3	3	3	2	2	3	2	3	3	-	2	3	2	2	3	2	2
CO4	3	3	3	2	2	3	2	3	3	-	2	3	2	2	3	2	2
Average	3	3	3	2	2	3	2	3	3	-	2	3	2	2	3	2	2

Course code EP-905A																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	3	3	3	3	2	3	-	3	3	3	3	3	3	2
CO2	3	3	3	3	3	3	3	2	3	-	3	3	3	3	3	2	2
CO3	3	3	3	3	3	3	3	2	3	-	3	3	3	3	3	3	2
CO4	3	3	3	3	3	3	3	2	3	-	3	3	3	3	3	2	2
Average	3	3	3	3	3	3	3	2	3	-	3	3	3	3	3	2.50	2

Course code EP-905B																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	2	3	3	3	2	3	-	3	3	3	3	3	3	2
CO2	3	3	3	2	3	3	3	2	3	-	3	3	3	3	3	2	2
CO3	3	3	3	2	3	3	3	2	3	-	3	3	3	3	3	3	2
CO4	3	3	3	2	3	3	3	2	3	-	3	3	3	3	3	2	2
Average	3	3	3	2	3	3	3	2	3	-	3	3	3	3	3	2.50	2

Course code EP-1001																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	2	2	3	3	2	3	-	3	3	3	2	3	3	2
CO2	3	3	3	2	2	3	3	2	3	-	3	3	3	2	3	2	2
CO3	3	3	3	2	2	3	3	2	3	-	3	3	3	2	3	3	2
CO4	3	3	3	2	2	3	3	2	3	-	3	3	3	2	3	2	2
Average	3	3	3	2	2	3	3	2	3	-	3	3	3	2	3	2.50	2

Course code EP-1002																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	3	2	3	3	3	3	-	3	3	3	3	3	2	2
CO2	3	3	3	3	2	3	3	3	3	-	3	3	3	3	3	2	2
CO3	3	3	3	3	2	3	3	3	3	-	3	3	3	3	3	2	2
CO4	3	3	3	3	2	3	3	3	3	-	3	3	3	3	3	2	2
Average	3	3	3	3	2	3	3	3	3	-	3	3	3	3	3	2	2

Course code EP-1003																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	3	2	3	3	3	3	-	2	3	3	3	3	2	2
CO2	3	3	3	3	2	3	3	3	3	-	2	3	3	3	3	2	2
CO3	3	3	3	3	2	3	3	3	3	-	2	3	3	3	3	2	2
CO4	3	3	3	3	2	3	3	3	3	-	2	3	3	3	3	2	2
Average	3	3	3	3	2	3	3	3	3	-	2	3	3	3	3	2	2

Course code EP-1004A																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	3	2	3	3	3	3	-	2	3	3	3	3	2	2
CO2	3	3	3	3	2	3	3	3	3	-	2	3	3	3	3	2	2
CO3	3	3	3	3	2	3	3	3	3	-	2	3	3	3	3	2	2
CO4	3	3	3	3	2	3	3	3	3	-	2	3	3	3	3	2	2
Average	3	3	3	3	2	3	3	3	3	-	2	3	3	3	3	2	2

Course code EP-1004B																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	2	2	3	2	3	3	-	2	3	3	2	3	2	2
CO2	3	3	3	2	2	3	2	3	3	-	2	3	3	2	3	2	2
CO3	3	3	3	2	2	3	2	3	3	-	2	3	3	2	3	2	2
CO4	3	3	3	2	2	3	2	3	3	-	2	3	3	2	3	2	2
Average	3	3	3	2	2	3	2	3	3	-	2	3	3	2	3	2	2

Course code EP-1005A																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	2	3	3	3	2	3	-	3	3	3	3	3	3	2
CO2	3	3	3	2	3	3	3	2	3	-	3	3	3	3	3	2	2
CO3	3	3	3	2	3	3	3	2	3	-	3	3	3	3	3	3	2
CO4	3	3	3	2	3	3	3	2	3	-	3	3	3	3	3	2	2
Average	3	3	3	2	3	3	3	2	3	-	3	3	3	3	3	2.50	2

Course code EP-1005B																	
Course outcomes	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	2	3	3	3	2	3	-	3	3	3	3	3	2	2
CO2	3	3	3	2	3	3	3	2	3	-	3	3	3	3	3	2	2
CO3	3	3	3	2	3	3	3	2	3	-	3	3	3	3	3	2	2
CO4	3	3	3	2	3	3	3	2	3	-	3	3	3	3	3	2	2
Average	3	3	3	2	3	3	3	2	3	-	3	3	3	3	3	2	2

Mapping of CO's with PO's &PSO's for five yrs. Integrated MSc. Engineering Physics (7th to 10th semesters)																	
Course code	**PO1- Knowledge**	**PO2- Research Aptitude**	**PO3- Communication**	**PO4- Problem Solving**	**PO5- Individual and Team Work**	**PO6- Investigation of Problems**	**PO7- Modern Tool usage**	**PO8- Science and Society**	**PO9- Life-Long Learning**	**PO10- Ethics**	**PO11- Project Management**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
EP-701	3	3	3	3	2	3	2	2	2	-	2	3	3	2	2.50	2.50	2
EP-702	3	3	3	3	2	3	2	2.50	2.50	-	2	3	2.50	2	3	2.50	2
EP-703	3	3	3	3	2	3	2	3	2	-	2	3	3	2	3	2.50	2
EP-704	3	3	3	3	3	3	3	2	3	-	3	3	3	2	3	2.50	2
EP-705	3	3	3	3	3	3	3	2	3	-	3	3	3	2	3	2.50	2
EP-801	3	3	3	2	2.50	2.50	3	2	3	-	3	3	3	2	3	2.50	2
EP-802	3	3	3	3	2	2.50	2	2	3	-	2	3	3	2	3	2.50	2
EP-803	3	3	3	2	2	2	2	2	3	-	2	3	3	2	3	2	2
EP-804	3	3	3	3	2	2	3	2	3	-	2	3	3	2	3	2	2
EP-805	3	3	3	3	3	3	3	2	3	-	3	3	3	3	3	2.50	2
EP-901	3	3	3	2	3	3	2	2	3	-	2	3	3	2	3	2	2
EP-902	3	3	3	2	2	3	2	2	2	-	2	3	3	2	3	2	2
EP-903	3	3	3	3	2	3	3	3	3	-	2	3	3	2	3	2	2

EP-904A	3	3	3	3	2	3	3	3	3	-	2	3	3	3	3	2	2
EP-904B	3	3	3	2	2	3	2	3	3	-	2	3	2	2	3	2	2
EP-905A	3	3	3	3	3	3	3	2	3	-	3	3	3	3	3	2.50	2
EP905B	3	3	3	2	3	3	3	2	3	-	3	3	3	3	3	2.50	2
EP-1001	3	3	3	2	2	3	3	2	3	-	3	3	3	2	3	2.50	2
EP-1002	3	3	3	3	2	3	3	3	3	-	3	3	3	3	3	2	2
EP-1003A	3	3	3	3	2	3	3	3	3	-	2	3	3	3	3	2	2
EP-1004A	3	3	3	3	2	3	3	3	3	-	2	3	3	3	3	2	2
EP-1004B	3	3	3	2	2	3	2	3	3	-	2	3	3	2	3	2	2
EP-1005A	3	3	3	2	3	3	3	2	3	-	3	3	3	3	3	2.50	2
EP1005B	3	3	3	2	3	3	3	2	3	-	3	3	3	3	3	2	2
Note: S-Strong, M-Medium, W-Weak																	

ANNEXURE TO ITEM 10(7)

KURUKSHETRA UNIVERSITY, KURUSKHETRA

('A+' Grade NAAC Accredited)

Department of Home Science

BACHELOR OF ARTS IN FASHION DESIGN (BA-FD)

w.e.f 2020-21

KURUKSHETRA UNIVERSITY KURUKSHETRA
New Syllabus
BACHELOR OF ARTS IN FASHION DESIGN (BA-FD)
w.e.f 2020-21
SEMESTER-I

Code No.	**Subject**	**Credits**	**Marks**	**Time of Exam.**
FD-101	English**	6	80+20*	3 hrs.
FD-102	Hindi**	6	80+20*	3 hrs.
FD-103	Introduction to Sewing Techniques	4	80+20*	3 hrs.
FD-104	Elements & Principles of Garment Design	4	80+20*	3 hrs.
	Environment Studies/Computer Applications***	2	50	3 hrs.

Practical /Lab based Courses

Code No.	Subject	Credits	Marks	Time
FD-105	Introduction to Sewing Techniques	2	50	3 hrs.
FD-106	Fashion Illustrations-I	2	50	3 hrs.

TOTAL 26 550

*Internal Assessment
**The students will study these courses along with other B.A. students as per University rules.
*** The colleges will offer one course in even semester and other in odd semester.

General Instructions-
1. One credit is equivalent to 1 hour of teaching/2 hours of Practical work
2. One credit is equivalent to 25 marks.
3. Practical exams will be conducted at the end of each semester.

KURUKSHETRA UNIVERSITY KURUKSHETRA

New Syllabus

BACHELOR OF ARTS IN FASHION DESIGN (BA-FD)

w.e.f 2020-21

SEMESTER-II

Code No.	**Subject**	**Credits**	**Marks**	**Time of Exam**
FD-111	English**	6	80+20*	3 hrs.
FD-112	Hindi**	6	80+20*	3 hrs.
FD-113	Traditional Indian Embroideries &Textiles	4	80+20*	3 hrs.
FD-114	Basic garment Construction	4	80+20*	3 hrs.
	Environment Studies/Computer Applications***	2	50	3 hrs.

Practical /Lab based Courses

Code No.	Subject	Credit	Marks	Time
FD-115	Basic Garment Construction	2	50	3 hrs.
FD-116	Traditional Indian Embroideries	2	50	3 hrs.

TOTAL 26 550

*Internal Assessment

**The students will study these courses along with other B.A. students as per University rules.

*** The colleges will offer one course in even semester and other in odd semester.

General Instructions-

1. One credit is equivalent to 1 hour of teaching/2 hours of Practical work
2. One credit is equivalent to 25 marks.
3. Practical exams will be conducted at the end of each semester.

KURUKSHETRA UNIVERSITY KURUKSHETRA
New Syllabus
BACHELOR OF ARTS IN FASHION DESIGN (BA-FD)
w.e.f. 2020-21
SEMESTER-1
Introduction to Sewing Techniques
Paper: FD- 103

Credits: 4
Total Marks: 100
Internal: 20
Duration of Exam: 3 hrs

NOTE:

- Examiner will set nine questions in all
- All the questions will carry equal marks
- Question No.-1 will be compulsory consisting of 5-10 short type questions(having no internal choice) and spread over the entire syllabus
- Eight questions, two questions from each unit (I, II, III & IV) will be set.
- The candidates are required to attempt five questions in all. Question No -1 will be compulsory, remaining four questions will be attempted by selecting one questions from each unit.

Unit-I

- Sewing machines – History, different types and maintenance. Common problems and their remedies; Tools and equipment; Introduction to sewing threads and their properties.
- Sewing techniques – Basic hand stitches – Basting, running, hand overcast, hemming stitches- plain and blind, slip stitch, tailor's tack; Seams and seam finishes – definition, types and their applications; Fullness – darts, tucks, pleats, gathers – definition, terms, types and application.

Unit- II

- Garment parts - Yokes--definition, purpose, with and without fullness, applications and construction; Sleeves – definition, terms and types; Collars – definition, terms, types and styles; Pockets-Definition and types; Plackets – definition, types of placket finishes;
- Others: Fasteners – definition, types, present trends; Finishes – neckline finishes – binding, facing; Different types of trimmings.

Unit-III

- Sewing Terminology – notches, grain, grain line, construction lines, center-front line, bias, true bias, bust line, waistline, seam line, seam, seam allowance, jog seams, dart points, direction of dart excess.
- Figure analysis-body ideals, body proportion, and height and weight distribution, individual figure analysis.

Unit-IV

- Anthropometric Measurements – Study of all body measurements for all age groups – infants, children, women and men; standards of body measurement, importance, standardization and size charts.
- Methods of garment construction/pattern making – drafting, draping and flat pattern, principles, advantages and disadvantages, terminology.

REFERENCES

- ✓ Thomas Anna Jacob: "The Art of Sewing". New Delhi, USB Publisher Distributors Ltd. 1994.
- ✓ Reader's Digest "Complete Guide to Sewing", Reader Digest 1995.
- ✓ Verma G. "Cutting Theory". Asian Publishers, Delhi. 1999.
- ✓ Sheri Doongaji. Basic Principles of Construction.
- ✓ Mc Calls's. Mc Calls's Sewing Book.
- ✓ Singer Sewing Essentials, Cowels Creative Publishing, Inc. 1996.
- ✓ Sewing Basics, Wendy Gardiner, Saly Milner publishing. 2003.

KURUKSHETRA UNIVERSITY KURUKSHETRA
New Syllabus
BACHELOR OF ARTS IN FASHION DESIGN (BA-FD)
w.e.f. 2020-21
SEMESTER-1
Elements & Principles of Garment Design
Paper: FD - 104

Credits: 4
Total Marks: 100
Internal: 20
Duration of Exam: 3 hrs

NOTE:

- Examiner will set nine questions in all
- All the questions will carry equal marks
- Question No.-1 will be compulsory consisting of 5-10 short type questions(having no internal choice) and spread over the entire syllabus
- Eight questions, two questions from each unit (I, II, III & IV) will be set.
- The candidates are required to attempt five questions in all. Question No -1 will be compulsory, remaining four questions will be attempted by selecting one questions from each unit.

Unit-I

Elements of Design: - Line, shape, texture, color, pattern.

Line Art: - Methods of introducing Lines- Fabric features, sewing features, decoration; Meaning, functions, aspects, effects of line including optical illusion and psychological effects.

Unit-II

Shape and patterns- Names, use, effects, Texture: Meaning, Determinants, Types, Effects, Uses

Unit-III

Colour: Light and colour phenomenon, colour theories as light pigment or Brewster Colour theory, psychological effect of colour, classification of colour. Colour Wheel: - Tints and shades, value, hue, intensity, saturation. Colour schemes and application of colour combination in designing of clothing or fabric.

Unit- IV

Principles of Design: - Harmony, Rhythm, Balance, Proportion and Emphasis. Meaning importance and methods of achieving each principle.

REFERENCES Text books:

- David Hormg. Colour–A workshop for Artists and Designers. Laurence King Publishing. 2005.

- Hideaki Chijiwa. Color Harmony. Rockport Publishers.1992.
- Mary Ganthe. Fashion and Color. Rockport Publishers. 1992.
- Sawahata Lesa. Color Harmony Workbook. Rockport Publishers. 2001.
- Sumathi, G.J. Elements of Fashion and Apparel Design. New Age International Publishers. 2002.
- Tatham Caroline and Seaman Julian. Fashion Design Drawing Course, Thames and Hudson. 2003.

KURUKSHETRA UNIVERSITY KURUKSHETRA

New Syllabus

BACHELOR OF ARTS IN FASHION DESIGN (BA-FD)

w.e.f. 2020-21

SEMESTER-1

Introduction to Sewing Techniques

Paper: FD – 105

Practical

Credits: 2
Total Marks: 50
Duration of Exam: 3 hrs

Making samples of:-

- Basic hand stitches- basting, running, hemming, overcasting, herringbone, back stitch etc.
- Seams and seam finishes – plain, flat, run and fell, French, montuamaker's seam, counter, top seam, lapped, hand over cast, turned and stitched, binding, piped seam, slot seam
- Fullness - darts, tucks, pleats, gathers, ruffles , frills
- Yokes - yoke with and without fullness
- Drafting & Construction of Collars– Stand and fall, peter-pan, shawl, sailor's, mandarin, cape.
- Pockets – Patch, welt, in-seam, bound, flap pocket, kurta pocket.
- Fasteners, Press button, button and button hole, hook & eye.
- Neckline Finishes- Facing, Binding.
- Plackets – Continuous, two piece placket, extended bodice.

KURUKSHETRA UNIVERSITY KURUKSHETRA
New Syllabus
BACHELOR OF ARTS IN FASHION DESIGN (BA-FD)
w.e.f. 2020-21
SEMESTER-1
Fashion Illustration-I
Practical
Paper Code: FD-106

Credits: 2
Total Marks: 50
Duration of exam: 3 hrs

Basic tools required for sketching:Free hand practice of brush &pencil, Introduction to use of poster paints, watercolors, staedtlers, pastels, chalks & inks.

Basic gesture drawing: Make stick figures in different poses, make geometric figures, blocking the human body, bodyline reading through different poses.
Fleshed figure: Understanding Human Anatomy and studying the different body parts in detail.
Drawing features: Face analysis. Draw features eyes, nose, ear, lips, face, hands, arms, feet, legs and hairstyles.
The fashion figure : 8½, 10 and 12 heads, front, back.

KURUKSHETRA UNIVERSITY, KURUSKHETRA
('A+' Grade NAAC Accredited)
Department of Home Science

BACHELOR OF ARTS IN FASHION DESIGN (BA-FD)
w.e.f 2020-21

KURUKSHETRA UNIVERSITY KURUKSHETRA
New Syllabus
BACHELOR OF ARTS IN FASHION DESIGN (BA-FD)
w.e.f. 2020-21
SEMESTER-II
Traditional Indian Embroideries &Textiles
Paper: FD- 113

Credits: 4
Total Marks: 100
Internal: 20
Duration of Exam: 3 hrs

NOTE:

- Examiner will set nine questions in all
- All the questions will carry equal marks
- Question No.-1 will be compulsory consisting of 5-10 short type questions (having no internal choice) and spread over the entire syllabus
- Eight questions, two questions from each unit (I, II, III & IV) will be set.
- The candidates are required to attempt five questions in all. Question No - 1 will be compulsory, remaining four questions will be attempted by selecting one questions from each unit.

Unit-I

Traditional embroideries of India: Phulkari of Punjab, Chikankari of U.P., Kantha of Bengal, Kasuti of Karnataka, Kashida of Kashmir, Chamba of H.P., Applique of Orrisa, Manipuri embroidery, Kuchh embroidery, Kathiawar embroidery.

Unit- II

Hand Painted textiles: Pattachitra of Orrisa, Pichhvai of Nathdwara, Kalamkari of Andhra Pradesh, Madhubani

Printed Textiles: Sanganeri, Bagru, Ajrakh

Tie- dyed Textiles: Patola of Patan, Telia Rumal, Pochampalli, Bandhani Gujrat, Bandhej Rajasthan

Unit-III

Woven Textiles: Malmal; **Shawls:** Kashmir, Kullu, Northeast;

Brocades: Banarasi,Amroo, Himroo, Mashroo,Jamdani,

Floor coverings: Durries, Carpets, Namda (Felt)

Unit-IV

Sarees: Raw material, Technique and Designs of following- Baluchari, Chanderi, Kota doria, Kanjeevaram, Maheshwari, Paithani, Sambhalpuri, Taant of WB, Muga, Tanchoi,Kasavu, Bhagalpur, Mysore, Gadwal

REFERENCES

- Jasleen Dhamija (1989): Hand woven Fabrics of India, Mapin Publishing. Pvt. Ltd
- Chattopadhyay, Kamaladevi (1977): Indian Embroideries. Wiley Eastern Ltd, New Delhi
- Shailaja D. Naik, (1996) Traditional Embroideries of India. A.P.H. Publishing Corporation, New Delhi
- Savitri Pandit (1976) Indian Embroidery—Its variegated charm
- Pandit Savitri and Patel Saroj (1970): Tie and Dye Batik techniques for all, Baroda, Faculty of home science.
- Chattopadhyay, Kamaladevi (1975): Handicrafts of India, New Delhi, Indian Council of Cultural Relations
- Dongerkery, S. (1951): The Romance of Indian Embroidery, Bombay, Thacker Co.
- Pevel. Learning to Embroideries. Publication INC New York

Pandit Savitri and Patel Saroj (1970): Tie and Dye Batik techniques for all, Baroda, Faculty of home science.

- Chattopadhyay, Kamaladevi (1975): Handicrafts of India, New Delhi, Indian Council of Cultural Relations
- Dongerkery, S. (1951): The Romance of Indian Embroidery, Bombay, Thacker Co.

KURUKSHETRA UNIVERSITY KURUKSHETRA
New Syllabus
BACHELOR OF ARTS IN FASHION DESIGN (BA-FD)
w.e.f. 2020-21
SEMESTER-II
Basic Garment Construction

Paper: FD- 114

Credits: 4
Total Marks: 100
Internal: 20
Duration of Exam: 3 hrs

NOTE:

- Examiner will set nine questions in all
- All the questions will carry equal marks
- Question No.-1 will be compulsory consisting of 5-10 short type questions (having no internal choice) and spread over the entire syllabus
- Eight questions, two questions from each unit (I, II, III & IV) will be set.
- The candidates are required to attempt five questions in all. Question No - 1 will be compulsory, remaining four questions will be attempted by selecting one questions from each unit.

UNIT-I

Drafting of patterns: Tools and supplies, Terms, Principles, advantages and disadvantages.
Commercial pattern: Types, Terms, Envelope, Contents, Use, advantages and disadvantages.
Draping: Terms, Principles, advantages and disadvantages.

Unit – II

Special fabrics and their handling
Suitability of different fabrics for different garments.
Sewing threads, shaping materials: Types of Foams, Facings, Linings, Can Can net etc. for garment making.

Unit-III

Garment making stages/steps: Calculating material for different garments, Preparation of fabric, Layout, Marking, Cutting, Joining/Sewing, Finishing

Unit – IV

Fit: Meaning of good fit, Principles of fitting, factors affecting fit, common fitting problems / defects and remedies.

Definition, comparison of the following: Homemade/ tailor made / readymade garments

Mending and Renovation

REFERENCES

- Thomas Anna Jacob: "The Art of Sewing". New Delhi, USB Publisher Distributors Ltd. 1994.
- Reader's Digest "Complete Guide to Sewing", Reader Digest 1995.
- Verma G. "Cutting Theory". Asian Publishers, Delhi. 1999.
- Sheri Doongaji. Basic Principles of Construction.
- Mc Calls's. Mc Calls's Sewing Book.
- Singer Sewing Essentials, Cowels Creative Publishing, Inc. 1996.
- Sewing Basics, Wendy Gardiner, Saly Milner publishing. 2003.

KURUKSHETRA UNIVERSITY KURUKSHETRA
New Syllabus
BACHELOR OF ARTS IN FASHION DESIGN (BA-FD)
w.e.f. 2020-21
SEMESTER-II
Basic Garment Construction
Paper: FD – 115
Practical

Credits: 2
Total Marks: 50
Duration of Exam: 3 hrs

Making 11draftings and 5 garments

- Drafting of basic Bodice and sleeve blocks: Child, Adult woman, Adultman: Total 6
- Drafting and sewing of Diaper, Bib, Jhabla
- Drafting and sewing of Kitchen Apron
- Drafting and sewing of pyjama: Child/woman/man

KURUKSHETRA UNIVERSITY KURUKSHETRA
New Syllabus
BACHELOR OF ARTS IN FASHION DESIGN (BA-FD)
w.e.f. 2020-21
SEMESTER-II
Traditional Indian Embroideries
Paper: FD – 116
Practical

Credits: 2
Total Marks: 50
Duration of Exam: 3 hrs

Making 10 samples of traditional embroideries of India:

- Phulkari of Punjab,
- Chikankari of U.P.,
- Kantha of Bengal,
- Kasuti of Karnataka,
- Kashida of Kashmir,
- Chamba of H.P.,
- Applique of Orrisa,
- Manipuri embroidery,
- Kuchh embroidery,
- Kathiawar embroidery.

Making one article of traditional embroidery.

ਇੰਸਟੀਟਿਊਟ ਆਫ਼ ਇੰਟੇਗ੍ਰੇਟਿਡ ਐਂਡ ਆਨਰਜ਼ ਸਟੱਡੀਜ਼ (IIHS)
ਕੁਰੂਕਸ਼ੇਤਰ ਯੂਨੀਵਰਸਿਟੀ, ਕੁਰੂਕਸ਼ੇਤਰ
ਸਕੀਮ ਆਫ਼ ਐਗਜ਼ਾਮੀਨੇਸ਼ਨ ਅਤੇ ਸਿਲੇਬਸ
ਬੀ. ਏ. (ਪ੍ਰੋਗਰਾਮ) ਪੰਜਾਬੀ (ਚੋਣਵੀਂ)
ਸੀ. ਬੀ. ਸੀ. ਐੱਸ (ਚੋਣ ਆਧਾਰਤ ਕ੍ਰੈਡਿਟ ਪੱਧਤੀ), LOCF
ਸੈਸ਼ਨ 2020-21 ਤੋਂ ਪੜਾਅਵਾਰ ਲਾਗੂ

INSTITUTE OF INTEGRATED STUDIES
KURUKSHETRA UNIVERSITY KURUKSHETRA
Scheme of Examination & Syllabus
B. A. (Programme) Panjabi (Elective)
CBCS (Choice Based Credit System), LOCF
To be implemented w.e.f Session 2020-21 (in Phased Manner)

ਕੋਰਸ ਕੋਡ (Course Code)	ਕੋਰਸ ਦਾ ਨਾਮ (Subject)	ਕ੍ਰੈਡਿਟ (Credits)	ਪੀਰੀਅਡ ਪ੍ਰਤੀ ਹਫ਼ਤਾ (Periods Per Week)	ਪ੍ਰੀਖਿਆ ਦੀ ਸਕੀਮ (Scheme of Examination)			
				ਪ੍ਰੀਖਿਆ (Theory)	ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ Internal Assesment	ਕੁੱਲ ਅੰਕ (Total Marks)	ਸਮਾਂ (Time)
ਸਮੈਸਟਰ ਪਹਿਲਾ (Semester I)							
B-PBI(E)-CC-101	ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ, ਇਕਾਂਗੀ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ (Aadhunik Punjabi Kavita, Ikangi Ate Viharak Punjabi)	06	06	120	30	150	03 Hrs
B-PBI(E)-AECC102*	ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ (Punjabi Bhasha : Mudhli Jaan-Pachhan)	02	02	40	10	50	02 Hrs
ਸਮੈਸਟਰ ਦੂਜਾ (Semester II)							
B-PBI(E)-CC-201	ਪੰਜਾਬੀ ਗਲਪ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ (Punjabi Galap Ate Viharak Punjabi)	06	06	120	30	150	03 Hrs
ਸਮੈਸਟਰ ਤੀਜਾ (Semester III)							
B-PBI(E)-CC-301	ਮੱਧਕਾਲੀ ਪੰਜਾਬੀ ਕਾਵਿ, ਸਵੈਜੀਵਨੀ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ (Madhkali Punjabi Kaav, Swaijiwani Ate Viharak Punjabi)	06	06	120	30	150	03 Hrs
ਸਮੈਸਟਰ ਚੌਥਾ (Semester IV)							
B-PBI(E)-CC-401	ਹਰਿਆਣਾ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ (Haryana Da Punjabi Sahit Ate Viharak Punjabi)	06	06	120	30	150	03 Hrs
ਸਮੈਸਟਰ ਪੰਜਵਾਂ (Semester V)							
B-PBI(E)-DSE-501 or B-PBI(E)-DSE-502 Or MOOC**	ਪੰਜਾਬੀ ਦਲਿਤ ਸਾਹਿਤ (Punjabi Dalit Sahit) or ਪੰਜਾਬੀ ਨਾਰੀ ਸਾਹਿਤ (Punjabi Nari Sahit)	06	06	120	30	150	03 Hrs
B-PBI(E)-GE-503	ਗੁਰਬਾਣੀ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ (Gurbani Ate Viharak Punjabi)	06	06	120	30	150	03 Hrs

ਸਮੈਸਟਰ ਛੇਵਾਂ (Semester VI)							
B-PBI(E)-DSE-601 or B-PBI(E)-DSE-602 Or MOOC**	ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ (Parvasi Punjabi Sahit) or ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਗਲਪ (Pakistani Punjabi Galap)	06	06	120	30	150	03 Hrs
B-PBI(E)-GE-603	ਪੰਜਾਬੀ ਲੰਮੀ ਕਵਿਤਾ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ (Punjabi Lammi Kavita Ate Viharak Punjabi)	06	06	120	30	150	03 Hrs
ਸਮੈਸਟਰ ਤੀਜਾ/ ਚੌਥਾ/ ਪੰਜਵਾਂ/ ਛੇਵਾਂ (Semester III/IV/V/VI)							
B-PBI(E)-SEC-1*** Or B-PBI(E)-SEC-2*** Or B-PBI(E)-SEC-3*** Or B-PBI(E)-SEC-4***	ਫ਼ਿਲਮਸਾਜ਼ੀ ਦਾ ਹੁਨਰ : ਅਧਿਐਨ ਅਤੇ ਸਿਖਲਾਈ (Filmsazi da Hunar : Adhyan Ate Sikhlai) or ਮੀਡੀਆ ਅਤੇ ਜਨ-ਸੰਚਾਰ ਦਾ ਹੁਨਰ : ਅਧਿਐਨ ਅਤੇ ਸਿਖਲਾਈ (Media Ate Jan-Sanchar : Adhyan Ate Sikhlai) or ਸਿਰਜਣਾਤਮਕ ਲੇਖਣ ਦਾ ਹੁਨਰ : ਅਧਿਐਨ ਅਤੇ ਸਿਖਲਾਈ (Sirjnatmak Lekhan da Hunar : Adhyan Ate Sikhlai) or ਨਾਟਕ ਅਤੇ ਰੰਗਮੰਚ ਦਾ ਹੁਨਰ : ਅਧਿਐਨ ਅਤੇ ਸਿਖਲਾਈ (Natak Ate Rangmanch Da Hunar : Adhyan Ate Sikhlai)	02	02	40	10	50	02

* **Student will opt AECC Panjabi in Semester Ist, IInd or IIIrd according to the Time Table adjustment in the Institute.**

** **MOOC course available on the SWAYAM portal**

*** **Student will opt any one out of these four Skill Enhanced Courses in Semester IIIrd, IVth, Vth or VIth according to the Time Table adjustment in the Institute.**

ਕੁਰੂਕਸ਼ੇਤਰ ਯੂਨੀਵਰਸਿਟੀ, ਕੁਰੂਕਸ਼ੇਤਰ ਦੇ ਇੰਸਟੀਟਿਊਟ ਆਫ਼ ਇੰਟੇਗ੍ਰੇਟਿਡ ਐਂਡ ਆਨਰਜ਼ ਸਟੱਡੀਜ਼ (IIHS) ਦੇ ਬੀ. ਏ. ਆਰਟਸ, ਸੀ. ਬੀ. ਸੀ. ਐੱਸ (CBCS) ਪ੍ਰੋਗਰਾਮ/ ਪਾਠਕ੍ਰਮ ਦੇ ਸੰਭਾਵਿਤ ਵਿਸ਼ੇਸ਼ ਨਤੀਜੇ (LOCF)

1	ਮਾਨਵ ਸਮਾਜ ਵਿਗਿਆਨ ਅਤੇ ਭਾਸ਼ਾਵਾਂ ਦੇ ਪ੍ਰਮੁੱਖ ਵਿਸ਼ਿਆਂ ਦੇ ਅਧਿਐਨ ਲਈ ਚੁਣੇ ਹੋਏ ਖੇਤਰਾਂ ਸਬੰਧੀ ਵਿਸਤ੍ਰਿਤ ਜਾਣਕਾਰੀ ਅਤੇ ਸਮਝ ਵਿਕਸਤ ਹੋਵੇਗੀ।
2	ਜਟਿਲ ਅਤੇ ਬਦਲਦੇ ਸਮਾਜਿਕ ਸੰਦਰਭਾਂ ਦੀ ਪਛਾਣ ਅਤੇ ਸਮਾਧਾਨ ਲਈ ਮਹੱਤਵਪੂਰਨ ਅਤੇ ਵਿਸ਼ਲੇਸ਼ਣਾਤਮਕ ਕੌਸ਼ਲ ਦੇ ਢੰਗ ਤਰੀਕੇ ਪੈਦਾ ਕੀਤੇ ਜਾਣਗੇ।
3	ਮਾਨਵ ਸਮਾਜ ਵਿਗਿਆਨ ਅਤੇ ਭਾਸ਼ਾਵਾਂ ਦੇ ਪ੍ਰਮੁੱਖ ਵਿਸ਼ਿਆਂ ਦੇ ਬਾਹਰੀ ਅਧਿਐਨ ਲਈ ਚੁਣੇ ਹੋਏ ਖੇਤਰਾਂ ਦੇ ਸੰਕਲਪਾਂ ਅਤੇ ਸਿਧਾਂਤਾਂ ਪ੍ਰਤੀ ਆਮ ਸਮਝ ਪੈਦਾ ਕੀਤੀ ਜਾਵੇਗੀ।
4	ਗਿਆਨ ਪੱਧਤੀ ਲਈ ਇੱਕ ਸੁਤੰਤਰ ਅਤੇ ਨਿਰਪੱਖ ਦ੍ਰਿਸ਼ਟੀਕੋਣ ਵਿਕਸਤ ਹੋਵੇਗਾ ਜਿਹੜਾ ਪਰਖ-ਪੜਚੋਲ ਅਤੇ ਸਿਧਾਂਤਾਂ ਦੇ ਉੱਚਿਤ ਢੰਗ ਤਰੀਕਿਆਂ ਦੀ ਵਰਤੋਂ ਕਰਦਾ ਹੋਵੇਗਾ।
5	ਗਿਆਨ ਦੇ ਵਿਭਿੰਨ ਰੂਪਾਂ ਅਤੇ ਉਹਨਾਂ ਨੂੰ ਪੈਦਾ ਕਰਨ ਵਾਲੇ ਸਮਾਜਿਕ, ਇਤਿਹਾਸਕ ਅਤੇ ਸਭਿਆਚਾਰਕ ਸੰਦਰਭਾਂ ਦੀ ਪਛਾਣ ਕਰਕੇ ਉਹਨਾਂ ਦੇ ਆਪਸੀ ਸਬੰਧਾਂ ਬਾਰੇ ਸਪੱਸ਼ਟਤਾ ਪੈਦਾ ਕੀਤੀ ਜਾਵੇਗੀ।
6	ਪ੍ਰਭਾਵਮਈ ਅਤੇ ਸੁਚੱਜੇ ਢੰਗ ਨਾਲ ਸੰਵਾਦ ਸਥਾਪਿਤ ਕਰਨ ਦੇ ਨਾਲ-ਨਾਲ ਪ੍ਰਵਾਹਮਈ ਵੇਗ ਵਿੱਚ ਇੱਕ ਖਾਸ ਭਾਸ਼ਾ ਵਿੱਚ ਸੁਣਨ, ਲਿਖਣ, ਬੋਲਣ ਅਤੇ ਪੜ੍ਹਨ ਦੀ ਸਮਰੱਥਾ ਪੈਦਾ ਹੋਵੇਗੀ।
7	ਵਿਦਵਾਨਾਂ ਦੇ ਸਮੂਹ ਅਤੇ ਕਾਰਜ ਸਥਾਨ ਤੇ ਪ੍ਰਭਾਵੀ ਅਤੇ ਗੰਭੀਰ ਰੂਪ ਵਿੱਚ ਇੱਕ ਸਮਝਦਾਰ ਅਤੇ ਸਿਆਣੇ ਪ੍ਰਤੀਭਾਗੀ ਵਾਂਗ ਅਨੁਸ਼ਾਸਨਾਤਮਕ ਰੂਪ ਵਿੱਚ ਕੰਮ ਕਰਨ ਦੀ ਸਮਰੱਥਾ ਪੈਦਾ ਹੋਵੇਗੀ।
8	ਕਾਰਜ ਸਥਾਨ ਅਤੇ ਵਿਅਕਤੀਗਤ ਰੂਪ ਜੀਵਨ ਵਿੱਚ ਆਉਣ ਵਾਲੀਆਂ ਚੁਣੌਤੀਆਂ ਅਤੇ ਉਹਨਾਂ ਦਾ ਸਾਹਮਣਾ ਕਰਨ ਲਈ ਸੁਤੰਤਰ, ਸਵੈ-ਪ੍ਰਤੀਬਿੰਬਤ ਅਤੇ ਰਚਨਾਤਮਕ/ ਸਿਰਜਣਾਤਮਕ ਰੂਪ ਵਿੱਚ ਕੰਮ ਕਰਨ ਦੀ ਭਾਵਨਾਂ ਪੈਦਾ ਹੋਵੇਗੀ

ਬੀ. ਏ. ਪੰਜਾਬੀ (ਇਲੈਕਟਿਵ) ਪ੍ਰੋਗਰਾਮ/ ਪਾਠਕ੍ਰਮ ਦੇ ਅਧਿਐਨ ਉਪਰੰਤ ਸੰਭਾਵਿਤ ਵਿਸ਼ੇਸ਼ ਨਤੀਜੇ :

1. ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ, ਭਾਸ਼ਾ ਵਿਗਿਆਨ, ਸਾਹਿਤ, ਸਭਿਆਚਾਰ ਅਤੇ ਲੋਕਧਾਰਾ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਵਿਹਾਰਕ ਅਧਿਐਨ/ ਪ੍ਰਯੋਗ ਦਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ।
2. ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਵਿਭਿੰਨ ਸਮਿਆਂ ਵਿੱਚ ਪ੍ਰਾਪਤ ਸਾਹਿਤ, ਸਾਹਿਤਕ ਧਾਰਾਵਾਂ, ਸਾਹਿਤਕਾਰਾਂ ਦੇ ਜੀਵਨ, ਸਿਰਜਣ ਪ੍ਰਕ੍ਰਿਆ, ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਅਤੇ ਲੋਕਧਾਰਾ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ਨੂੰ ਜਿੱਥੇ ਸਮਝਣ/ ਮੁਲਾਂਕਣ ਕਰਨ ਦੀ ਸੂਝ/ ਸਮਝ ਵਿਕਸਤ ਹੋਵੇਗੀ ਉੱਥੇ ਉਹਨਾਂ ਵਿੱਚ ਉਸ ਸਮੇਂ ਨਾਲ ਸਬੰਧਤ ਸਮਾਜਿਕ, ਆਰਥਿਕ, ਰਾਜਨੀਤਿਕ ਅਤੇ ਸਭਿਆਚਾਰਕ ਸਥਿਤੀਆਂ/ ਪ੍ਰਸਥਿਤੀਆਂ ਨੂੰ ਸਮਝਣ ਦਾ ਬੋਧ ਅਤੇ ਆਲੋਚਨਾਤਮਕ ਦ੍ਰਿਸ਼ਟੀ ਵੀ ਪੈਦਾ ਹੋਵੇਗੀ।
3. ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਜਿੱਥੇ ਸਾਹਿਤਕ ਕਿਰਤਾਂ ਨੂੰ ਪੜ੍ਹਨ ਦੀ ਰੁਚੀ, ਉਹਨਾਂ ਦੇ ਵਿਅਕਤੀਤਵ ਅਤੇ ਕਿੱਤਾਮੁਖੀ ਵਿਕਾਸ ਦੀ ਉਸਾਰੀ ਵਿੱਚ ਵਾਧਾ ਹੋਵੇਗਾ ਉਥੇ ਉਹਨਾਂ ਵਿੱਚ ਰੁਜ਼ਗਾਰ ਲਈ ਭਾਸ਼ਾਈ ਕੌਸ਼ਲ, ਕੰਪਿਊਟਰ, ਅਨੁਵਾਦ, ਪੱਤਰਕਾਰਿਤਾ, ਮੀਡੀਆ, ਰੰਗਮੰਚ ਅਤੇ ਫ਼ਿਲਮਾਂ, ਸਭਿਆਚਾਰ ਅਤੇ ਲੋਕਧਾਰਾ ਆਦਿ ਬਾਰੇ ਵਿਹਾਰਕ ਗਿਆਨ ਪ੍ਰਤੀ ਸਮਝ ਵੀ ਪੈਦਾ ਹੋਵੇਗੀ।
4. ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ, ਸਾਹਿਤ ਅਤੇ ਸਭਿਆਚਾਰ ਅਤੇ ਲੋਕਧਾਰਾ ਦੇ ਪ੍ਰਾਪਤ ਵਿਭਿੰਨ ਰੂਪਾਂ ਦੇ ਅਧਿਐਨ ਰਾਹੀਂ ਜਿੱਥੇ ਭਾਰਤੀ ਸਮਾਜ, ਸਭਿਆਚਾਰਕ ਜੀਵਨ ਮੁੱਲਾਂ ਦੇ ਵਿਭਿੰਨ ਪੱਖਾਂ ਵਿੱਚ ਪਈ ਸਾਂਝ ਦੇ ਵਿਭਿੰਨ ਤੱਤਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ ਉੱਥੇ ਉਹਨਾਂ ਵਿੱਚ ਕੌਮੀ ਅਤੇ ਕੌਮਾਂਤਰੀ ਸਮਾਜਾਂ ਨੂੰ ਗਲੋਬਲੀ ਪਰਿਪੇਖ ਵਿੱਚ ਸਮਝਣ ਦੀ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।

Table 1. Mapping matrix for all the Courses of B.A. (Punjabi) Elective

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
B-PBI(E)-CC-101	3	2.25	3	2.25	2.75	2.25	3	3	3	3	2.25	3
B-PBI(E)-AECC102	3	3	3	2	2	3	3	3	3	3	3	3
B-PBI(E)-CC-201	3	3	2.75	2	2	3	3	3	3	2.75	3	3
B-PBI(E)-CC-301	3	2	3	3	2.75	3	2.75	3	3	3	3	3
B-PBI(E)-CC-401	3	2.75	3	2	3	2.25	3	3	3	2.75	3	2
B-PBI(E)-DSE-501	3	3	3	2	3	2	3	3	3	3	3	2.75
B-PBI(E)-DSE-502	3	3	3	2	3	2	3	3	3	3	3	2.75
B-PBI(E)-GE-503	3	2.75	3	2	3	2	3	3	3	2.75	3	2.75
B-PBI(E)-DSE-601	3	2.75	3	2	3	2	3	3	3	3	3	2.75
B-PBI(E)-DSE-602	3	2.75	3	2	3	2	3	3	3	3	3	2.75
B-PBI(E)-GE-603	3	3	3	2	3	2	3	3	3	3	3	2.75
B-PBI(E)-SEC-1	3	2.75	3	3	3	3	2.75	2.75	2.25	2.25	3	3
B-PBI(E)-SEC-2	3	3	3	2	3	2	3	3	3	3	3	2.75
B-PBI(C)-SEC-3	3	2.75	3	2.25	3	2	3	3	3	2.75	3	2.75
B-PBI(C)-SEC-4	3	3	3	2	3	2	3	3	3	3	3	2.75

Attainment of Cos : Attainment Level for Internal Assessment

Table given below shows the CO attainment levels assuming the set target of 60% marks :

Attainment Level	
1 (Low level of Attainment)	60% of Students score more than 60% of marks in class tests of a course
2 (Medium level of Attainment)	70% of Students score more than 55% of marks in class tests of a course
3 (High level of Attainment)	80% of Students score more than 50% of marks in class tests of a course

Table 3. CO Attainment Levels for End Semester Examination (ESE)

Attainment Level	
1 (Low level of Attainment)	60% of Students obtained letter grade of A or above (for CBCS programme) or score more than 60% of Marks (for non-CBCS programms) in ESE of a course
2 (Medium level of Attainment)	70% of Students obtained letter grade of A or above (for CBCS programme) or score more than 55% of Marks (for non-CBCS programms) in ESE of a course
3 (High level of Attainment)	80% of Students obtained letter grade of A or above (for CBCS programme) or score more than 50% of Marks (for non-CBCS programms) in ESE of a course

Semester : I

B-PBI (E) CC-101

ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ, ਇਕਾਂਗੀ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ

(Adhunik Panjabi Kavita, Ikangi Ate Viharak Punjabi)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਕਵਿਤਾ ਦੇ ਸਿਧਾਂਤ/ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਕਵਿਤਾ ਦੇ ਵਿਸ਼ੇ/ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਵਿਤਾਵਾਂ ਦੀ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਹੋਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰ ਦੇ ਹੋਣਗੇ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਇਕਾਂਗੀ ਦੇ ਸਿਧਾਂਤ/ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀਆਂ ਇਕਾਂਗੀਆਂ ਦੇ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ/ ਵਿਸ਼ੇ/ ਸਮੱਸਿਆ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਸਬੰਧਤ ਇਕਾਂਗੀਆਂ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਇਕਾਂਗੀਕਾਰਾਂ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਦੇ ਪੰਜ ਉਪ-ਭਾਗ ਹਨ। ਉਪ-ਭਾਗ ਪਹਿਲਾ ਵਿੱਚ ਨਾਂਵ-ਪੜਨਾਂਵ, ਉਪ-ਭਾਗ ਦੂਜਾ ਵਿੱਚ ਕਿਰਿਆ, ਉਪਭਾਗ ਤੀਜਾ ਵਿੱਚ ਅਖਾਣ, ਉਪਭਾਗ ਚੌਥਾ ਵਿੱਚ ਮੁਹਾਵਰੇ ਬਾਰੇ ਅਤੇ ਉਪ ਭਾਗ ਪੰਜਵਾਂ ਵਿੱਚ ਦਫ਼ਤਰੀ ਸ਼ਬਦਾਵਲੀ (ਦਿੱਤੇ ਗਏ ਦਸ ਸ਼ਬਦਾਂ ਵਿੱਚੋਂ ਕੋਈ ਛੇ ਸ਼ਬਦ ਕਰਨੇ ਹਨ) ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਉਪ-ਭਾਗ ਛੇ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਅਤੇ ਪੰਜਾਬੀ ਇਕਾਂਗੀ ਦੇ ਸਿਧਾਂਤ ਅਤੇ ਵਿਵਹਾਰਕ ਅਧਿਐਨ ਦੀ ਵਿਸਤ੍ਰਿਤ ਜਾਣਕਾਰੀ ਪ੍ਰਦਾਨ ਕਰਨਾ।
- ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੇ ਅਧਿਐਨ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਪ੍ਰਤੀ ਵਿਸ਼ੇਸ਼ ਸਮਝ ਪੈਦਾ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

B-PBI (E) CC-101.1 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਅਤੇ ਪੰਜਾਬੀ ਇਕਾਂਗੀ ਦੇ ਵਿਧਾਗਤ ਸਰੋਕਾਰਾਂ, ਇਤਿਹਾਸਕ ਵਿਕਾਸ, ਪ੍ਰਮੁੱਖ ਝੁਕਾਵਾਂ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।

B-PBI (E) CC-101.2 ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਕਾਵਿ ਸੰਗ੍ਰਿਹ/ ਇਕਾਂਗੀ ਸੰਗ੍ਰਿਹ ਦੇ ਅਧਿਐਨ ਦੁਆਰਾ ਕਾਵਿ ਅਧਿਐਨ ਅਤੇ ਇਕਾਂਗੀ ਦੀ ਪੜ੍ਹਤ/ ਮੁਲਾਂਕਣ ਦੀ ਸੂਝ ਅਤੇ ਸਮਝ ਪੈਦਾ ਹੋਵੇਗੀ।

B-PBI (E) CC-101.3 ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਕਵਿਤਾ ਨੂੰ ਪੜ੍ਹਨ/ ਸਮਝਣ/ ਸਿਰਜਣ ਅਤੇ ਇਕਾਂਗੀ ਨੂੰ ਪੜ੍ਹਨ/ ਸਮਝਣ/ ਸਿਰਜਣ ਅਤੇ ਖੇਡਣ ਦੀ ਰੁਚੀ ਪੈਦਾ ਹੋਵੇਗੀ।

B-PBI (E) CC-101.4 ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੀ ਪੜ੍ਹਾਈ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਸੰਰਚਨਾ ਅਤੇ ਵਰਤੋਂ ਵਿਹਾਰ ਬਾਰੇ ਸਮਝ ਅਤੇ ਮੁਹਾਰਤ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ***ਕਾਵਿ ਨਾਦ*** (ਚੋਣਵਾਂ ਕਾਵਿ ਸੰਗ੍ਰਿਹ) ਸੰਪਾਦਕ ਡਾ. ਸਾਹਿਬ ਸਿੰਘ ਅਰਸ਼ੀ ਅਤੇ ਡਾ. ਰਮੇਸ਼ ਕੁਮਾਰ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਕੁਰੂਕਸ਼ੇਤਰ ਯੂਨੀਵਰਸਿਟੀ, ਕੁਰੂਕਸ਼ੇਤਰ। (ਭਾਈ ਵੀਰ ਸਿੰਘ, ਅੰਮ੍ਰਿਤਾ ਪ੍ਰੀਤਮ, ਮੋਹਨ ਸਿੰਘ, ਬਾਵਾ ਬਲਵੰਤ, ਸ਼ਿਵ ਕੁਮਾਰ, ਸੰਤੋਖ ਸਿੰਘ ਧੀਰ, ਰਮੇਸ਼ ਕੁਮਾਰ, ਹਰਭਜਨ ਸਿੰਘ ਕੋਮਲ, ਪਾਸ਼, ਸ. ਸ. ਮੀਸ਼ਾ– ਸਿਰਫ਼ ਇਹ ਕਵੀ ਹੀ ਪੜ੍ਹਾਏ ਜਾਣ)

1.1 ਕਵਿਤਾ ਦੀ ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

1.2 ਕਵਿਤਾ ਦਾ ਸਾਰ ਅਤੇ ਵਿਸ਼ਾ ਵਸਤੂ

1.3 ਕਵਿਤਾ ਦਾ ਕਲਾ ਪੱਖ

1.4 ਕਵਿਤਾ ਦਾ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ

1.5 ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ

1.6 ਕਵੀਆਂ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ

1.7 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਦੂਜਾ

2. ***ਇਕਾਂਗੀ ਬਹੁ-ਰੰਗੀ*** (ਚੋਣਵਾਂ ਇਕਾਂਗੀ ਸੰਗ੍ਰਿਹ) ਸੰਪਾਦਕ ਡਾ. ਹਰਸਿਮਰਨ ਸਿੰਘ ਰੰਧਾਵਾ ਅਤੇ ਡਾ. ਬਲਵਿੰਦਰ ਸਿੰਘ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਕੁਰੂਕਸ਼ੇਤਰ ਯੂਨੀਵਰਸਿਟੀ, ਕੁਰੂਕਸ਼ੇਤਰ।

2.1 ਇਕਾਂਗੀ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਤੱਤ ਅਤੇ ਰੂਪਾਕਾਰਕ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

2.2 ਇਤਿਹਾਸਕ ਪਿਛੋਕੜ

2.3 ਉਦੇਸ਼ ਅਤੇ ਆਦਰਸ਼

2.4 ਸਾਰ, ਵਿਸ਼ਾ ਵਸਤੂ ਅਤੇ ਸਮੱਸਿਆ

2.5 ਪਾਤਰ ਉਸਾਰੀ

2.6 ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ

2.8 ਇਕਾਂਗੀਕਾਰਾਂ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ

2.7 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਤੀਜਾ (ਵਿਹਾਰਕ ਪੰਜਾਬੀ)

3. ਵਿਹਾਰਕ ਪੰਜਾਬੀ

3.1 ਨਾਂਵ ਅਤੇ ਪੜਨਾਂਵ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਕਿਸਮਾਂ

3.2 ਕਿਰਿਆ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਕਿਸਮਾਂ

3.3 ਅਖਾਣ : ਅਰਥ, ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਯੋਗ, ਮਹੱਤਵ ਅਤੇ ਪੰਜਾਬੀ ਅਖਾਣ, ਅਖਾਣ ਅਤੇ ਮੁਹਾਵਰੇ ਵਿੱਚ ਅੰਤਰ

3.4 ਮੁਹਾਵਰਾ : ਅਰਥ, ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਯੋਗ, ਮਹੱਤਵ ਅਤੇ ਪੰਜਾਬੀ ਮੁਹਾਵਰੇ, ਅਖਾਣਾਂ ਅਤੇ ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਰਤੋਂ ਪ੍ਰਤੀ ਘੱਟ ਰਹੇ ਰੁਝਾਨ ਦੇ ਕਾਰਨ ਅਤੇ ਸੁਝਾਅ

3.5 ਦਫ਼ਤਰੀ ਸ਼ਬਦਾਵਲੀ (100 ਸ਼ਬਦ ਨਾਲ ਨੱਥੀ ਹਨ)

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਸ. ਸ. ਖਹਿਰਾ — **ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਵਿਆਕਰਣ ਅਤੇ ਬਣਤਰ**
ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ

2. ਹਰਕੀਰਤ ਸਿੰਘ — **ਪੰਜਾਬੀ ਸ਼ਬਦ ਰੂਪ ਅਤੇ ਸ਼ਬਦ ਜੋੜ ਕੋਸ਼**
ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ

3. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ — **ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਣ**
ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ, ਪਟਿਆਲਾ, 2006

ਦਫ਼ਤਰੀ ਸ਼ਬਦਾਵਲੀ (Official Terminology)

1.	Accountant	ਲੇਖਾਕਾਰ
2.	Acknowledgement	ਪਹੁੰਚ ਰਸੀਦ
3.	Action	ਕਾਰਵਾਈ
4.	Administration	ਪ੍ਰਸ਼ਾਸਨ
5.	Advance	ਪੇਸ਼ਗੀ
6.	All concerned to note	ਸਮੂਹ ਸੰਬੰਧਿਤ ਨੋਟ ਕਰਨ
7.	Agreement	ਸਮਝੌਤਾ
8.	Allocation	ਮਿਲੀ ਰਕਮ
9.	Allotment	ਵੰਡ
10.	Allowance	ਭੱਤਾ
11.	Amount	ਰਕਮ/ਰਾਸ਼ੀ
12.	Annual	ਸਾਲਾਨਾ
13.	Applicant	ਪ੍ਰਾਰਥਕ
14.	Application	ਪ੍ਰਾਰਥਨਾ-ਪੱਤਰ
15.	Appointing Authority	ਨਿਯੁਕਤੀ ਅਧਿਕਾਰੀ
16.	Appointment	ਨਿਯੁਕਤੀ
17.	Approval	ਪ੍ਰਵਾਨਗੀ
18.	Approximate	ਲਗਭਗ
19.	Arrears	ਬਕਾਇਆ
20.	As desired	ਇੱਛਾ ਅਨੁਸਾਰ
21.	As early as possible	ਜਿੰਨੀ ਜਲਦੀ ਹੋ ਸਕੇ
22.	Assessment	ਮੁੱਲ-ਨਿਰਧਾਰਣ
23.	Assistant	ਸਹਾਇਕ
24.	As the case may be	ਜਿਹੋ ਜਿਹੀ ਹਾਲਤ ਹੋਵੇ
25.	Attached here with	ਨਾਲ ਨੱਥੀ
26.	Attendance	ਹਾਜ਼ਰੀ

27.	Attention is invited	ਧਿਆਨ ਦਿਵਾਇਆ ਜਾਂਦਾ ਹੈ
28.	Attested copy	ਤਸਦੀਕੀ-ਨਕਲ
29.	At your earliest convenience	ਜਿਤਨੀ ਜਲਦੀ ਹੋ ਸਕੇ
30.	Audit	ਲੇਖਾ ਪੜਤਾਲ
31.	Authorities	ਅਧਿਕਾਰੀ-ਵਰਗ
32.	Balance	ਬਕਾਇਆ
33.	Based on facts	ਤੱਥ-ਆਧਾਰਿਤ
34.	Basic Pay	ਮੂਲ ਵੇਤਨ
35.	Bill	ਬਿੱਲ
36.	Book post	ਬੁੱਕ-ਪੋਸਟ
37.	Both day inclusive	ਦੋਨਾਂ ਦਿਨਾਂ ਸਮੇਤ
38.	Branch	ਸ਼ਾਖਾ
39.	Bring to notice	ਧਿਆਨ ਦਿਵਾਉਣਾ
40.	Brought forward	ਪਿਛਲਾ ਜੋੜ ਅੱਗੇ ਲਿਆਉਣਾ
41.	Calculation	ਹਿਸਾਬ
42.	Capital	ਪੂੰਜੀ/ਸਰਮਾਇਆ
43.	Carbon Copy	ਕਾਰਬਨ ਕਾਪੀ
44.	Cash Book	ਰੋਕੜ/ਵਹੀ/ ਕੈਸ਼ ਬੁੱਕ
45.	Cashier	ਖਜ਼ਾਨਚੀ
46.	Cash memo	ਨਕਦ ਪੱਤਰ
47.	Casual Leave	ਸਬੱਬੀ ਛੁੱਟੀ
48.	Catalogue	ਸੂਚੀ ਪੱਤਰ
49.	Checked and found correct	ਪੜਤਾਲ ਕੀਤੀ ਤੇ ਠੀਕ ਨਿਕਲਿਆ
50.	Cheque	ਚੈੱਕ
51.	Circular	ਗਸ਼ਤੀ ਚਿੱਠੀ
52.	Claim	ਦਾਅਵਾ
53.	Clerical Staff	ਕਲਰਕ/ਅਮਲਾ
54.	Come into force	ਲਾਗੂ ਹੋਣਾ
55.	Category	ਵਰਗ
56.	Come into Operation	ਚਾਲੂ ਹੋਣਾ
57.	Compensation	ਮੁਆਵਜ਼ਾ
58.	Compensatory leave	ਇਵਜ਼ੀ ਛੁੱਟੀ
59.	Competent Authority	ਸਮਰੱਥ ਅਧਿਕਾਰੀ
60.	Compliance	ਪਾਲਣਾ
61.	Compulsory Retirement	ਲਾਜ਼ਮੀ ਸੇਵਾ ਨਵਿਰਤੀ
62.	Concurrence	ਸਹਿਮਤੀ/ ਸੰਮਤੀ
63.	Conduct	ਆਚਰਣ/ ਵਿਹਾਰ
64.	Confidential	ਗੁਪਤ

65.	Contingency	ਅਚਾਨਕੀ
66.	Conveyance Allowance	ਸਵਾਰੀ ਭੱਤਾ
67.	Copy	ਨਕਲ ਉਤਾਰਾ
68.	Copy enclose for ready reference	ਤਿਆਰ ਸੰਦਰਭ ਲਈ ਕਾਪੀ ਨਾਲ ਨੱਥੀ
69.	Cost Price	ਲਾਗਤ ਮੁੱਲ
70.	Counter foil	ਪ੍ਰਤਿਪੇਜ
71.	Counter signature	ਪ੍ਰਤਿ ਹਸਤਾਖਰ
72.	Daily Wages	ਦਿਹਾੜੀ
73.	Damage	ਨੁਕਸਾਨ
74.	Dated	ਮਿਤੀ
75.	Day Book	ਰੋਜ਼ਨਾਮਚਾ
76.	Dealing Assistant	ਕਾਰਜਕਾਰੀ ਸਹਾਇਕ
77.	Dear Mr.	ਪਿਆਰੇ ਸ਼੍ਰੀ
78.	Dearness Allowance	ਮਹਿੰਗਾਈ ਭੱਤਾ
79.	Delay Regretted	ਦੇਰੀ ਲਈ ਖਿਮਾ
80.	Demy-official (D.O.) Letter	ਅਰਧ ਸਰਕਾਰੀ ਪੱਤਰ
81.	Departmental Action	ਵਿਭਾਗੀ ਕਾਰਵਾਈ
82.	Deputation Allowance	ਪ੍ਰਤਿ ਨਿਯੁਕਤੀ ਭੱਤਾ
83.	Dispatch Clerk	ਡਿਸਪੈਚ ਕਲਰਕ
84.	Discrepancies may be reconciled	ਫਰਕ ਦੂਰ ਕੀਤਾ ਜਾਵੇ
85.	Document	ਦਸਤਾਵੇਜ਼
86.	Documentary proof	ਦਸਤਾਵੇਜ਼ੀ ਸਬੂਤ
87.	Draft for Approval	ਪਰਵਾਨਗੀ ਲਈ ਖਰੜਾ
88.	Early action will be appreciated	ਛੇਤੀ ਕਾਰਵਾਈ ਸ਼ਲਾਘਾਯੋਗ ਹੋਵੇਗੀ
89.	Early orders are solicited	ਆਗਿਆ ਲਈ ਸ਼ੀਘਰ ਬੇਨਤੀ ਹੈ
90.	Earned Leave	ਕਮਾਈ ਛੁੱਟੀ
91.	Efficiency bar	ਨਿਪੁੰਨਤਾ ਰੋਕ
92.	Eligible	ਪਾਤਰ/ਯੋਗ
93.	Embezzlement	ਗ਼ਬਨ
94.	Employee	ਕਰਮਚਾਰੀ
95.	Enclosure	ਨੱਥੀ-ਪੱਤਰ
96.	Endorsement	ਪਿੱਠਅੰਕਣ
97.	Entry	ਦਾਖ਼ਲਾ
98.	Essential qualification	ਲਾਜ਼ਮੀ ਯੋਗਤਾਵਾਂ
99.	Estimate	ਅਨੁਮਾਨ
100.	Evaluation	ਮੁਲਾਂਕਣ/ ਮੁਲਅੰਕਣ

Mapping Matrix of Course B-PBI (E) CC-101

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (B-PBI (E) CC-101) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course B-PBI (E) CC-101

CO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**
B-PBI (E) CC-101.1	**3**	**2**	**3**	**2**	**3**	**2**	**3**	**3**
B-PBI (E) CC-101.2	**3**	**3**	**3**	**3**	**3**	**2**	**3**	**3**
B-PBI (E) CC-101.3	**3**	**2**	**3**	**2**	**3**	**2**	**3**	**3**
B-PBI (E) CC-101.4	**3**	**2**	**3**	**2**	**2**	**3**	**3**	**3**
Average	**3**	**2.25**	**3**	**2.25**	**2.75**	**2.25**	**3**	**3**

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (B-PBI (E) CC-101) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course B-PBI (E) CC-101

CO	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**
B-PBI (E) CC-101.1	**3**	**3**	**2**	**3**
B-PBI (E) CC-101.2	**3**	**3**	**2**	**3**
B-PBI (E) CC-101.3	**3**	**3**	**2**	**3**
B-PBI (E) CC-101.4	**3**	**3**	**3**	**3**
Average	**3**	**3**	**2.25**	**3**

Semester : I

B-Pbi (E) AECC-102

ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ

(Punjabi Bhasha : Mudhli Jaan Pachhan)

ਕ੍ਰੈਡਿਟ : 2

ਸਮਾਂ : 2 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 50

(ਪੇਪਰ : 40, ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 10)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 10 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਪੰਜ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਪੰਜੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਦੋ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ 5 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਮੁੱਢਲਾ ਗਿਆਨ ਪ੍ਰਦਾਨ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

B-Pbi (E) AECC-102.1 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਸ਼ਬਦ ਰਚਨਾ, ਲਗਾਂ ਮਾਤਰਾ ਅਤੇ ਸ਼ਬਦ-ਜੋੜ ਨੇਮਾਂ ਦਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ।

B-Pbi (E) AECC-102.2 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਦੀਆਂ ਵਿਆਕਰਣਿਕ ਸ਼੍ਰੇਣੀਆਂ ਬਾਰੇ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ।

B-Pbi (E) AECC-102.3 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਾਕ, ਵਾਕ ਰਚਨਾ ਅਤੇ ਅਰਥ ਬੋਧ ਅਤੇ ਪੰਜਾਬੀ ਅਰਥ ਵਿਗਿਆਨ ਦੀ ਮੁੱਢਲੀ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।

B-Pbi (E) AECC-102.4 ਪੰਜਾਬੀ ਵਿੱਚ ਪੱਤਰ ਲੇਖਣ ਦੀ ਜਾਣਕਾਰੀ ਅਤੇ ਪੱਤਰ ਲੇਖਣ ਵਿੱਚ ਮੁਹਾਰਤ ਹਾਸਿਲ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਧੁਨੀ/ ਅੱਖਰ ਬੋਧ

1.1 ਅੱਖਰਾਂ/ ਵਰਣਾਂ ਦੀ ਪਛਾਣ

1.2 ਅੱਖਰ ਉਚਾਰਣ

1.3 ਲਗਾਂ ਮਾਤਰਾਵਾਂ ਅਤੇ ਲਗਾਖਰ

1.4 ਸਵਰ-ਵਿਅੰਜਨ

1.5 ਸ਼ਬਦ ਜੋੜ ਨਿਯਮ

ਯੂਨਿਟ ਦੂਸਰਾ

2. ਸ਼ਬਦ ਬੋਧ ਤੇ ਵਿਆਕਰਣਕ ਸ਼੍ਰੇਣੀਆਂ

2.1 ਸ਼ਬਦ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਸ਼ਬਦ ਬਣਤਰ,

2.2 ਸ਼ਬਦ ਰਚਨਾ (ਅਗੇਤਰ, ਪਿਛੇਤਰ)

2.3 ਵਿਆਕਰਣਕ ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ-ਨਾਂਵ, ਪੜਨਾਂਵ, ਵਿਸ਼ੇਸ਼ਣ, ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ, ਸਬੰਧਕ, ਯੋਜਕ, ਵਿਸਮਿਕ ਅਤੇ ਪਾਰਟੀਕਲਜ਼ (ਨਿਪਾਤ) ਦੀ ਸੰਖੇਪ ਜਾਣਕਾਰੀ

ਯੂਨਿਟ ਤੀਸਰਾ

3. ਵਾਕ ਬੋਧ ਅਤੇ ਅਰਥ ਬੋਧ

3.1 ਵਾਕ : ਅਰਥ, ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵਾਕ ਰਚਨਾ

3.2 ਵਾਕ ਵੰਡ

3.3 ਅਰਥ : ਅਰਥ, ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਪੰਜਾਬੀ ਅਰਥਾਵਲੀ (ਸਮਾਨਾਰਥਕ ਸ਼ਬਦ, ਬਹੁਅਰਥਕ ਸ਼ਬਦ, ਵਿਰੋਧਾਰਥਕ ਸ਼ਬਦ, ਵਿਪਰੀਤਆਰਥਕ ਸ਼ਬਦ

3.4 ਚਿੱਠੀ ਪੱਤਰ ਲੇਖਣ : ਅਰਥ, ਕਿਸਮਾਂ ਅਤੇ ਨਿਯਮ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

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2. ਹਰਕੀਰਤ ਸਿੰਘ, **ਪੰਜਾਬੀ ਸ਼ਬਦ ਰੂਪ ਅਤੇ ਸ਼ਬਦ ਜੋੜ ਕੋਸ਼,**ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1988
3. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ, **ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਣ,** ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ, ਪਟਿਆਲਾ, 2●●6
4. **ਅਜੋਕੀ ਪੰਜਾਬੀ ਦਾ ਵਿਆਕਰਣ ਅਤੇ ਲੇਖ ਰਚਨਾ**, ਪੰਜਾਬ ਸਕੂਲ ਸਿੱਖਿਆ ਬੋਰਡ, ਮੋਹਾਲੀ, 2●12
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6. ਡਾ. ਸਤਨਾਮ ਸਿੰਘ ਸੰਧੂ, **ਆਏਂ ਪੰਜਾਬੀ ਸੀਖੇਂ**, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
7. Dr. Hardev Singh Bahri, **Teach Yourself Panjabi,** Publication Buraeu, Punjabi University, Patiala.
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Mapping Matrix of Course B-Pbi (E) AECC-102

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (B-Pbi (E) AECC-102) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course B-Pbi (E) AECC-102

CO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**
B-Pbi (E) AECC-102.1	**3**	**3**	**3**	**2**	**2**	**3**	**3**	**3**
B-Pbi (E) AECC-102.2	**3**	**3**	**3**	**2**	**2**	**3**	**3**	**3**
B-Pbi (E) AECC-102.3	**3**	**3**	**3**	**2**	**2**	**3**	**3**	**3**
B-Pbi (E) AECC-102.4	**3**	**3**	**3**	**2**	**2**	**3**	**3**	**3**
Average	**3**	**3**	**3**	**2**	**2**	**3**	**3**	**3**

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (B-Pbi (E) AECC-102) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course B-Pbi (E) AECC-102

CO	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**
B-Pbi (E) AECC-102.1	**3**	**3**	**3**	**3**
B-Pbi (E) AECC-102.2	**3**	**3**	**3**	**3**
B-Pbi (E) AECC-102.3	**3**	**3**	**3**	**3**
B-Pbi (E) AECC-102.4	**3**	**3**	**3**	**3**
Average	**3**	**3**	**3**	**3**

Semester : II

B-PBI (E) CC-201

ਪੰਜਾਬੀ ਗਲਪ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ

(Punjabi Galap ate Viharak Punjabi

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਨਾਵਲ ਦੇ ਸਿਧਾਂਤ/ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਾਵਲ ਦੇ ਵਿਸ਼ੇ/ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਾਵਲ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਨਾਵਲਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰ ਦੇ ਹੋਣਗੇ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਕਹਾਣੀ ਦੇ ਸਿਧਾਂਤ/ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀਆਂ ਕਹਾਣੀਆਂ ਦੇ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ/ ਵਿਸ਼ੇ/ ਸਮੱਸਿਆ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਸਬੰਧਤ ਕਹਾਣੀਆਂ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਹਾਣੀਕਾਰਾਂ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਦੇ ਪੰਜ ਉਪ-ਭਾਗ ਹਨ। ਉਪ-ਭਾਗ ਪਹਿਲਾ ਵਿੱਚ ਅਗੇਤਰ ਪਿਛੇਤਰ, ਉਪ-ਭਾਗ ਦੂਜਾ ਵਿੱਚ ਸਮਾਨਾਰਥਕ, ਵਿਪਰੀਤਾਰਥਕ ਅਤੇ ਬਹੁਅਰਥਕ ਸ਼ਬਦ, ਉਪਭਾਗ ਤੀਜਾ ਵਿੱਚ ਵਿਸ਼ੇਸ਼ਣ ਅਤੇ ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ ਅਤੇ ਉਪਭਾਗ ਚੌਥਾ ਵਿੱਚ ਸਬੰਧਕ ਅਤੇ ਉਪ-ਭਾਗ ਪੰਜਵਾਂ ਵਿੱਚ ਦਫ਼ਤਰੀ ਸ਼ਬਦਾਵਲੀ (ਦਿੱਤੇ ਗਏ ਦਸ ਸ਼ਬਦਾਂ ਵਿੱਚੋਂ ਕੋਈ ਛੇ ਸ਼ਬਦ ਕਰਨੇ ਹਨ) ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਉਪ-ਭਾਗ ਛੇ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਗਲਪ ਦੇ ਸਿਧਾਂਤ ਅਤੇ ਵਿਵਹਾਰਕ ਅਧਿਐਨ ਦੀ ਵਿਸਤ੍ਰਿਤ ਜਾਣਕਾਰੀ ਪ੍ਰਦਾਨ ਕਰਨਾ।
- ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੇ ਅਧਿਐਨ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਪ੍ਰਤੀ ਵਿਸ਼ੇਸ਼ ਸਮਝ ਪੈਦਾ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

B-PBI (E) CC-201.1 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਗਲਪ ਦੇ ਪ੍ਰਮੁੱਖ ਰੂਪਾਂ (ਨਾਵਲ, ਕਹਾਣੀ) ਦੇ ਵਿਧਾਗਤ ਪ੍ਰਤੀਮਾਨਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।

B-PBI (E) CC-201.2 ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਪੰਜਾਬੀ ਨਾਵਲ ਅਤੇ ਕਹਾਣੀ ਦੇ ਇਤਿਹਾਸ, ਪ੍ਰਮੁੱਖ ਝੁਕਾਵਾਂ, ਪ੍ਰਵਿਰਤੀਆਂ ਅਤੇ ਵਿਸ਼ੇਸ਼ ਨਾਵਲਕਾਰਾਂ ਦੇ ਜੀਵਨ ਅਤੇ ਸਿਰਜਣ ਪ੍ਰਕ੍ਰਿਆ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।

B-PBI (E) CC-201.3 ਵਿਸ਼ੇਸ਼ ਨਾਵਲ ਅਤੇ ਕਹਾਣੀਆਂ ਦੀ ਪੜ੍ਹਤ ਦੁਆਰਾ ਗਲਪ ਅਧਿਐਨ ਦੀ ਸੂਝ ਅਤੇ ਸਮਝ ਪੈਦਾ ਹੋਵੇਗੀ।

B-PBI (E) CC-201.4 ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੀ ਪੜ੍ਹਾਈ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਸੰਰਚਨਾ ਅਤੇ ਵਰਤੋਂ ਵਿਹਾਰ ਬਾਰੇ ਸਮਝ ਅਤੇ ਮੁਹਾਰਤ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ (ਨਾਵਲ)

1. ***ਏਹੁ ਹਮਾਰਾ ਜੀਵਣਾ***, ਦਲੀਪ ਕੌਰ ਟਿਵਾਣਾ, ਆਰਸੀ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ

1.1 ਨਾਵਲ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ਅਤੇ ਪੰਜਾਬੀ ਨਾਵਲ ਦਾ ਸੰਖੇਪ ਇਤਿਹਾਸ

1.2 ਵਿਸ਼ਾ ਵਸਤੂ ਅਤੇ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ

1.3 ਨਾਰੀ ਸੰਵੇਦਨਾ

1.4 ਪਾਤਰ ਚਿੱਤਰਣ

1.5 ਪੰਜਾਬੀ ਜਗੀਰੂ ਸਮਾਜ ਅਤੇ ਔਰਤ ਦੀ ਸਥਿਤੀ

1.6 ਲੇਖਿਕਾ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ

1.7 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਦੂਜਾ (ਕਹਾਣੀ)

2. ***ਕਥਾ ਯਾਤਰਾ*** (ਚੋਣਵਾਂ ਕਹਾਣੀ ਸੰਗ੍ਰਿਹ), ਸੰਪਾਦਕ ਡਾ. ਗੁਰਦੇਵ ਸਿੰਘ ਅਤੇ ਹਰਸ਼ਰਨ ਕੌਰ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਕੁਰੂਕਸ਼ੇਤਰ ਯੂਨੀਵਰਸਿਟੀ, ਕੁਰੂਕਸ਼ੇਤਰ।

2.1 ਕਹਾਣੀ ਦਾ ਅਰਥ, ਪਰਿਭਾਸ਼ਾ, ਤੱਤ ਅਤੇ ਰੂਪਾਕਾਰਕ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

2.2 ਪੰਜਾਬੀ ਕਹਾਣੀ ਦਾ ਜਨਮ ਅਤੇ ਸੰਖੇਪ ਇਤਿਹਾਸ

2.3 ਕਥਾਨਕ ਸਾਰ ਅਤੇ ਸਮੱਸਿਆ

2.4 ਵਿਸ਼ਾ ਵਸਤੂ ਅਤੇ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ

2.5 ਪਾਤਰ ਚਿੱਤਰਣ

2.6 ਕਹਾਣੀ ਜੁਗਤਾਂ

2.7 ਕਹਾਣੀਕਾਰਾਂ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ

2.8 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਤੀਜਾ (ਵਿਹਾਰਕ ਪੰਜਾਬੀ)

3. ਵਿਹਾਰਕ ਪੰਜਾਬੀ

3.1 ਅਗੇਤਰ ਪਿਛੇਤਰ

3.2 ਸਮਾਨਾਰਥਕ, ਵਿਪਰੀਤਾਰਥਕ ਅਤੇ ਬਹੁਅਰਥਕ ਸ਼ਬਦ

3.3 ਵਿਸ਼ੇਸ਼ਣ ਅਤੇ ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ

3.4 ਸਬੰਧਕ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਕਿਸਮਾਂ

3.5 ਦਫ਼ਤਰੀ ਸ਼ਬਦਾਵਲੀ (100 ਸ਼ਬਦ ਨਾਲ ਨੱਥੀ ਹਨ)

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਸਵਿੰਦਰ ਸਿੰਘ ਉੱਪਲ — **ਪੰਜਾਬੀ ਕਹਾਣੀ**
ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1995

2. ਸੁਖਦੇਵ ਸਿੰਘ ਖਾਹਰਾ — **ਪੰਜਾਬੀ ਨਾਵਲ ਦਾ ਸੰਸਕ੍ਰਿਤਕ ਅਧਿਐਨ**
ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ, 1986

3. ਸੁਰਿੰਦਰ ਕੁਮਾਰ ਦਵੇਸ਼ਵਰ — **ਨਾਵਲ ਸ਼ਾਸਤਰ ਤੇ ਪੰਜਾਬੀ ਨਾਵਲ**
ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2002

4. ਹਰਸਿਮਰਨ ਸਿੰਘ ਰੰਧਾਵਾ **ਬਿਰਤਾਂਤਕ ਗਲਪ ਪ੍ਰਬੰਧ**
ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ, 1993
5. ਕਰਨੈਲ ਸਿੰਘ ਥਿੰਦ (ਸੰਪਾ.) **ਪੰਜਾਬੀ ਨਾਵਲ : ਸਰਵੇਖਣ ਤੇ ਮੁਲਾਂਕਣ**
ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ, 1974
6. ਗੁਰਪਾਲ ਸਿੰਘ ਸੰਧੂ **ਪੰਜਾਬੀ ਨਾਵਲ ਦਾ ਇਤਿਹਾਸ**
ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 2005
7. ਗੁਰਬਖਸ਼ ਸਿੰਘ ਫ਼ਰੈਂਕ **ਨਿੱਕੀ ਕਹਾਣੀ ਅਤੇ ਪੰਜਾਬੀ ਨਿੱਕੀ ਕਹਾਣੀ**
ਪੰਜਾਬੀ ਰਾਈਟਰਜ਼ ਕੋਆਪਰੇਟਿਵ ਸੁਸਾਇਟੀ ਲਿਮ., ਲੁਧਿਆਣਾ, 1988
8. ਜਸਪਾਲ ਕਾਂਗ **ਪੰਜਾਬੀ ਨਾਵਲ ਦਾ ਗਲਪ ਸ਼ਾਸਤਰ**
ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ, 1995
9. ਜੋਗਿੰਦਰ ਸਿੰਘ ਨਹਿਰੂ **ਨਾਵਲ ਦੀ ਵਿਧਾ**
ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ
10. -ਉਹੀ- **ਕਹਾਣੀ ਦੀ ਵਿਧਾ**
ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ
11. ਜੋਗਿੰਦਰ ਸਿੰਘ ਰਾਹੀ **ਪੰਜਾਬੀ ਨਾਵਲ**
ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ, 1978
12. ਟੀ. ਆਰ. ਵਿਨੋਦ **ਪੰਜਾਬੀ ਕਹਾਣੀ ਅਧਿਐਨ**
ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ, 1988
13. ਧਨਵੰਤ ਕੌਰ **ਪੰਜਾਬੀ ਕਹਾਣੀ : ਬਿਰਤਾਂਤ ਸ਼ਾਸਤਰੀ ਅਧਿਐਨ**
ਆਰਸੀ ਪਬਲੀਕੇਸ਼ਨ, ਦਿੱਲੀ
14. -ਉਹੀ- **ਪੰਜਾਬੀ ਕਹਾਣੀ ਸ਼ਾਸਤਰ**
ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, 2014
15. ਬਲਦੇਵ ਸਿੰਘ ਧਾਲੀਵਾਲ **ਪੰਜਾਬੀ ਕਹਾਣੀ ਦਾ ਇਤਿਹਾਸ**
ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 2005
16. ਪਰਮਜੀਤ ਕੌਰ ਸਿੱਧੂ **ਪੰਜਾਬੀ ਨਾਵਲ : ਸਿਧਾਂਤ ਤੇ ਸਮੀਖਿਆ**
ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2013
17. ਰਜਨੀਸ਼ ਬਹਾਦਰ ਸਿੰਘ **ਪੰਜਾਬੀ ਨਾਵਲ : ਵਿਰਾਸਤ ਅਤੇ ਵਰਤਮਾਨ**
ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2020
18. ਰਤਨ ਸਿੰਘ ਜੱਗੀ **ਖੋਜ ਪਤ੍ਰਿਕਾ (ਗਲਪ ਵਿਸ਼ੇਸ਼ ਅੰਕ) ਅੰਕ 19**
ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1982
19. ਸ. ਸ. ਖਹਿਰਾ **ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਵਿਆਕਰਣ ਅਤੇ ਬਣਤਰ**
ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
20. ਹਰਕੀਰਤ ਸਿੰਘ **ਪੰਜਾਬੀ ਸ਼ਬਦ ਰੂਪ ਅਤੇ ਸ਼ਬਦ ਜੋੜ ਕੋਸ਼**
ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
21. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ **ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਣ**
ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ, ਪਟਿਆਲਾ, 2006

ਦਫ਼ਤਰੀ ਸ਼ਬਦਾਵਲੀ (Official Terminology)

1.	Exercise of Powers	ਅਧਿਕਾਰ ਵਰਤੋਂ
2.	Ex-Officio	ਪਦਵੀ ਕਾਰਣ
3.	Facts and Figures	ਤੱਥ ਅਤੇ ਅੰਕੜੇ
4.	File	ਮਿਸਲ/ ਫਾਈਲ
5.	Financial Year	ਵਿੱਤੀ ਸਾਲ
6.	For Comments	ਟਿੱਪਣੀ ਲਈ
7.	For disposal	ਨਿਪਟਾਰੇ ਲਈ
8.	For information	ਸੂਚਨਾ ਲਈ
9.	Formal Approval	ਰਸਮੀ ਪ੍ਰਵਾਨਗੀ
10.	For Strict Compliance	ਇੰਨ ਬਿੰਨ ਪਾਲਣਾ ਲਈ
11.	Gazette Holiday	ਗਜ਼ਟਿਡ ਛੁੱਟੀ
12.	Grant-in-aid	ਮਾਲੀ ਸਹਾਇਤਾ
13.	Have no comments to make	ਕਿਸੇ ਟਿੱਪਣੀ ਦੀ ਲੋੜ ਨਹੀਂ
14.	Head clerk	ਪ੍ਰਧਾਨ ਕਲਰਕ
15.	Head of Account	ਲੇਖੇ ਦੀ ਮੱਦ
16.	Held in abeyance	ਰੋਕ ਰੱਖਿਆ ਹੈ
17.	Herewith enclosed	ਨਾਲ ਨੱਥੀ ਹੈ
18.	Honorarium	ਮਾਨ ਭੇਂਟ
19.	I am directed	ਨਾਲ ਹਿਦਾਇਤ ਹੋਈ ਹੈ
20.	Implement	ਅਮਲ ਵਿੱਚ ਲਿਆਉਣਾ
21.	In accordance with	ਦੇ ਅਨੁਸਾਰ
22.	In addition to	ਇਸ ਤੋਂ ਇਲਾਵਾ
23.	In advance	ਅਗੇਤੀ
24.	Increment	ਸਾਲਾਨਾ ਤਰੱਕੀ
25.	Initial pay	ਆਰੰਭਕ ਤਨਖਾਹ
26.	Inland letter	ਅੰਤਰਦੇਸ਼ੀ ਪੱਤਰ
27.	In order to merit	ਯੋਗਤਾ ਅਨੁਸਾਰ
28.	In respect of	ਦੇ ਵਿਸ਼ੇ ਵਿਚ
29.	Interim pay	ਅੰਤਰਿਮ
30.	Intimation	ਇਤਲਾਹ
31.	In the light of	ਇਸ ਦੀ ਰੋਸ਼ਨੀ ਵਿਚ
32.	Irregularity	ਬੇਨਿਯਮੀ
33.	Joining date	ਸੇਵਾ ਆਰੰਭ ਮਿਤੀ
34.	Joining report	ਸੇਵਾ ਇਤਲਾਹ

35.	Joining Time	ਹਾਜਰੀ ਸਮਾਂ
36.	Kindly Acknowledge Receipt	ਕਿਰਪਾ ਪਹੁੰਚ ਭੇਜੀ ਜਾਵੇ
37.	Leave not due	ਨਾ ਬਣਦੀ ਛੁੱਟੀ
38.	Leave with pay	ਤਨਖਾਹ ਸਹਿਤ ਛੁੱਟੀ
39.	Leave preparatory to retirement	ਨਵਿਰਤੀ ਪੂਰਵ ਛੁੱਟੀ
40.	Length of service	ਸੇਵਾ ਕਾਲ
41.	Maintenance Allowance	ਨਿਰਵਾਹ ਭੱਤਾ
42.	May be filed	ਫਾਈਲ ਕਰ ਦਿੱਤਾ ਜਾਵੇ
43.	Medical Certificate fitness	ਡਾਕਟਰੀ ਅਰੋਗਤਾ ਪ੍ਰਮਾਣ
44.	Memorandum	ਯਾਦ ਪੱਤਰ
45.	Minimum	ਘੱਟੋ ਘੱਟ
46.	Ministerial Staff	ਦਫ਼ਤਰ ਅਮਲਾ
47.	Misappropriation	ਖਿਆਲਾਤ
48.	Miscellaneous	ਫੁੱਟਕਲ
49.	Modification	ਤਰਮੀਮ
50.	Necessary action	ਲੋੜੀਂਦੀ ਕਾਰਵਾਈ
51.	Non Official	ਗ਼ੈਰ-ਸਰਕਾਰੀ
52.	Noted	ਨੋਟ ਕੀਤਾ
53.	Notification	ਅਧਿਸੂਚਨਾ
54.	Noting and Drafting	ਇੱਪਣੀ ਤੇ ਲੇਖਨ
55.	Office Order	ਦਫ਼ਤਰੀ ਹੁਕਮ
56.	Official Correspondence	ਸਰਕਾਰੀ ਪੱਤਰ ਵਿਹਾਰ
57.	Officiating Allowance	ਕਾਇਮ ਮੁਕਾਮੀ ਭੱਤਾ
58.	Out today	ਅੱਜ ਹੀ ਭੇਜੋ
59.	Paper under consideration	ਵਿਚਾਰ ਅਧੀਨ ਪੱਤਰ
60.	Pay bill	ਵੇਤਨ-ਬਿੱਲ
61.	Pay scale	ਵੇਤਨਮਾਨ
62.	Pending decision	ਫੈਸਲਾ ਹੋਣ ਤੱਕ
63.	Personal file	ਨਿੱਜੀ ਮਿਸਲ
64.	Please discuss	ਵਿਚਾਰ ਵਟਾਂਦਰੇ ਲਈ ਆਓ
65.	Please expedite	ਛੇਤੀ ਨਿਪਟਾਇਆ ਜਾਵੇ
66.	Please speak	ਗੱਲ ਕਰੋ
67.	Prescribed form	ਨਿਯਤ ਫਾਰਮ
68.	Probation	ਅਜਮਾਇਸ਼
69.	Procedure	ਕਾਰਜ ਵਿਧੀ
70.	Promotion	ਤਰੱਕੀ

71.	Recurring	ਆਵਰਤੀ
72.	Refund	ਧਨ ਵਾਪਸੀ
73.	Reinstatement	ਬਹਾਲੀ
74.	Reminder	ਚਿਤਾਵਨੀ ਪੱਤਰ
75.	Registration	ਤਿਆਗ ਪੱਤਰ
76.	Retrenchment	ਛਾਂਟੀ
77.	Returns	ਵਿਵਰਣ
78.	Rough Copy	ਕੱਚੀ ਨਕਲ
79.	Rules and Regulations	ਨਿਯਮ ਤੇ ਵਿਨਿਯਮ
80.	Sanction	ਪ੍ਰਵਾਨਗੀ
81.	Service Book	ਸੇਵਾ-ਪੱਤਰੀ
82.	Stock Taking	ਮਾਲ ਦੀ ਪੜਤਾਲ
83.	Submitted for information	ਸੂਚਨਾ ਲਈ ਪੇਸ਼ ਹੈ
84.	Subordinate staff	ਅਧੀਨ ਅਮਲਾ
85.	Suspension	ਮੁਅੱਤਲੀ
86.	Temporary Appointment	ਆਰਜ਼ੀ ਨਿਯੁਕਤੀ
87.	Through Proper Channel	ਯੋਗ ਪ੍ਰਣਾਲੀ ਦੁਆਰਾ
88.	Time barred	ਮਿਆਦ ਪੁੱਗਿਆ
89.	Top Priority	ਪਹਿਲ/ ਅਗੇਤ
90.	Top Secret	ਅਤਿ ਗੁਪਤ
91.	True Copy	ਅਸਲੀ ਕਾਪੀ
92.	Urgent	ਤੁਰੰਤ/ ਜ਼ਰੂਰੀ
93.	Voucher	ਵਾਊਚਰ
94.	Waiting list	ਉਡੀਕ-ਸੂਚੀ
95.	With effect from	ਮਿਤੀ ਤੋਂ
96.	With Reference	ਦੇ ਹਵਾਲੇ ਨਾਲ
97.	With retrospective effect	ਪਿੱਛੇ ਤੋਂ ਲਾਗੂ
98.	Yours faithfully	ਵਿਸ਼ਵਾਸ ਪਾਤਰ
99.	Yours sincerely	ਹਿੱਤੂ
100.	Clerical Error	ਲਿਖਾਈ ਭੁੱਲ

Mapping Matrix of Course B-PBI (E) CC-201

Mapping: Mapping is a process of representing the correlation between COs and POs, Cos and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (B-PBI (E) CC-201) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course B-PBI (E) CC-201

CO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**
B-PBI (E) CC-201.1	**3**	**3**	**2**	**2**	**2**	**3**	**3**	**3**
B-PBI (E) CC-201.2	**3**	**3**	**3**	**2**	**2**	**3**	**3**	**3**
B-PBI (E) CC-201.3	**3**	**3**	**3**	**2**	**2**	**3**	**3**	**3**
B-PBI (E) CC-201.4	**3**	**3**	**3**	**2**	**2**	**3**	**3**	**3**
Average	**3**	**3**	**2.75**	**2**	**2**	**3**	**3**	**3**

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (B-PBI (E) CC-201) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course B-PBI (E) CC-201

CO	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**
B-PBI (E) CC-201.1	**3**	**2**	**3**	**3**
B-PBI (E) CC-201.2	**3**	**3**	**3**	**3**
B-PBI (E) CC-201.3	**3**	**3**	**3**	**3**
B-PBI (E) CC-201.4	**3**	**3**	**3**	**3**
Average	**3**	**2.75**	**3**	**3**

Semester : III

B-PBI (E)-CC-301

ਮੱਧਕਾਲੀ ਪੰਜਾਬੀ ਕਾਵਿ, ਸਵੈਜੀਵਨੀ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ

(Madhkali Panjabi Kav, Swaijivni ate Viharak Panjabi)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਕਵਿਤਾ ਦੇ ਸਿਧਾਂਤ/ ਮੱਧਕਾਲੀਨ ਕਾਵਿ ਦੇ ਸੁਭਾਅ/ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਕਵਿਤਾ ਦੇ ਵਿਸ਼ੇ/ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਵਿਤਾਵਾਂ ਦੀ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਹੋਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰ ਦੇ ਹੋਣਗੇ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਵੈਜੀਵਨੀ ਦੇ ਸਿਧਾਂਤ ਅਤੇ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਸਵੈਜੀਵਨੀ ਦੇ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ/ ਵਿਸ਼ੇ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਸਬੰਧਤ ਸਵੈਜੀਵਨੀ ਦੀ ਕਲਾਤਮਕਤਾ/ ਵਾਰਤਕ ਸ਼ੈਲੀ/ ਭਾਸ਼ਾ ਸ਼ੈਲੀ ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਸਵੈਜੀਵਨੀਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਦੇ ਪੰਜ ਉਪ-ਭਾਗ ਹਨ। ਉਪ-ਭਾਗ ਪਹਿਲਾ ਵਿੱਚ ਬਹੁਤੇ ਸ਼ਬਦਾਂ ਦੀ ਥਾਂ ਇੱਕ ਸ਼ਬਦ (ਛੇ), ਉਪ-ਭਾਗ ਦੂਜਾ ਵਿੱਚ ਸ਼ੁੱਧ-ਅਸ਼ੁੱਧ ਸ਼ਬਦ (ਛੇ), ਉਪਭਾਗ ਤੀਜਾ ਵਿੱਚ ਵਿਰੋਧੀ ਸ਼ਬਦ (ਛੇ), ਉਪ-ਭਾਗ ਚੌਥਾ ਵਿੱਚ ਛੰਦਾਂ ਬਾਰੇ ਅਤੇ ਉਪਭਾਗ ਪੰਜਵਾਂ ਵਿੱਚ ਸਾਹਿਤਕ ਸ਼ਬਦਾਵਲੀ (ਦਿੱਤੇ ਗਏ ਦਸ ਸ਼ਬਦਾਂ ਵਿੱਚੋਂ ਕੋਈ ਛੇ ਸ਼ਬਦ ਕਰਨੇ ਹਨ) ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਉਪ-ਭਾਗ ਛੇ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਮੱਧਕਾਲੀ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦੇ ਸਿਧਾਂਤ ਅਤੇ ਵਿਵਹਾਰਕ ਅਧਿਐਨ ਦੀ ਵਿਸਤ੍ਰਿਤ ਜਾਣਕਾਰੀ ਪ੍ਰਦਾਨ ਕਰਨਾ।
- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਸਵੈਜੀਵਨੀ ਅਤੇ ਪੰਜਾਬੀ ਸਵੈਜੀਵਨੀ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਵਿਹਾਰਕ ਪਹਿਲੂਆਂ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ।
- ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੇ ਅਧਿਐਨ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਪ੍ਰਤੀ ਵਿਸ਼ੇਸ਼ ਸਮਝ ਪੈਦਾ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

B-PBI (E)-CC-301.1 ਵਿਦਿਆਰਥੀ ਮੱਧਕਾਲੀਨ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦੇ ਵਿਭਿੰਨ ਰੂਪਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

B-PBI (E)-CC-301.2 ਗੁਰਮਤਿ, ਸੂਫ਼ੀ ਅਤੇ ਭਗਤੀ ਕਾਵਿ ਵਿਚਲੀਆਂ ਵਿਚਾਰਧਾਰਕ ਸਾਂਝਾਂ ਅਤੇ ਵਖਰੇਵਿਆਂ ਦੀ ਸਮਝ ਪੈਦਾ ਹੋਵੇਗੀ।

B-PBI (E)-CC-301..3 ਸਵੈਜੀਵਨੀ ਅਤੇ ਪੰਜਾਬੀ ਸਵੈਜੀਵਨੀ ਦੀ ਪੜ੍ਹਤ ਦੁਆਰਾ ਸਵੈਜੀਵਨੀ ਅਧਿਐਨ ਦੀ ਸੂਝ ਅਤੇ ਸਮਝ ਪੈਦਾ ਹੋਵੇਗੀ।

B-PBI (E)-CC-301.4 ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੀ ਪੜ੍ਹਾਈ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਸੰਰਚਨਾ ਅਤੇ ਵਰਤੋਂ ਵਿਹਾਰ ਬਾਰੇ ਸਮਝ ਅਤੇ ਮੁਹਾਰਤ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ (ਕਵਿਤਾ)

1. ***ਕਾਵਿ ਜੋਤਾਂ*** (ਚੋਣਵਾਂ ਕਾਵਿ ਸੰਗ੍ਰਿਹ), ਸੰਪਾਦਕ ਪ੍ਰੋ. ਅਮਰਜੀਤ ਸਿੰਘ ਉਬਰਾਇ ਅਤੇ ਡਾ. ਗੁਰਦਿਆਲ ਸਿੰਘ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਕੁਰੂਕਸ਼ੇਤਰ ਯੂਨੀਵਰਸਿਟੀ, ਕੁਰੂਕਸ਼ੇਤਰ।

1.1 ਮੱਧਕਾਲੀ ਪੰਜਾਬੀ ਕਵਿਤਾ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

1.2 ਗੁਰਮਤਿ, ਸੂਫ਼ੀ, ਕਿੱਸਾ ਅਤੇ ਵਾਰ ਕਾਵਿ ਦਾ ਸੰਕਲਪ

1.3 ਗੁਰਮਤਿ, ਸੂਫ਼ੀ, ਕਿੱਸਾ ਅਤੇ ਵਾਰ : ਰੂਪਾਕਾਰਕ ਅਧਿਐਨ

1.4 ਕਵਿਤਾਵਾਂ ਦਾ ਸਾਰ ਅਤੇ ਵਿਸ਼ਾ ਵਸਤੂ

1.5 ਕਲਾਤਮਕ ਪੱਖ

1.6 ਕਵਿਤਾ ਦਾ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ

1.7 ਮੱਧਕਾਲੀਨ ਕਾਵਿ ਰੂਪ : ਵਿਧਾਗਤ ਅੰਤਰ ਨਿਖੇੜ

1.8 ਮੱਧਕਾਲੀ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦਾ ਸਮਾਜ-ਸਭਿਆਚਾਰਕ ਪੱਖ

1.9 ਕਵੀਆਂ ਦਾ ਵੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ

1.1● ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਦੂਜਾ (ਸਵੈਜੀਵਨੀ)

2. ***ਮੈਂ ਸਾਂ ਜੱਜ ਦਾ ਅਰਦਲੀ***, ਨਿੰਦਰ ਘੁਗਿਆਣਵੀ, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2004

2.1 ਸਵੈਜੀਵਨੀ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਤੱਤ ਅਤੇ ਰੂਪਾਕਾਰਕ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

2.2 ਜੀਵਨੀ ਅਤੇ ਸਵੈਜੀਵਨੀ ਵਿਚਲਾ ਅੰਤਰ

2.3 ਸਫ਼ਲ ਸਵੈਜੀਵਨੀ ਦੇ ਤੌਰ 'ਤੇ ਪਰਖ਼

2.4 ਵਾਰਤਕ ਸ਼ੈਲੀ

2.5 ਭਾਸ਼ਾ ਸ਼ੈਲੀ

2.6 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਤੀਜਾ (ਵਿਹਾਰਕ ਪੰਜਾਬੀ)

3. ਵਿਹਾਰਕ ਪੰਜਾਬੀ

3.1 ਬਹੁਤੇ ਸ਼ਬਦਾਂ ਦੀ ਥਾਂ ਇੱਕ ਸ਼ਬਦ

3.2 ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨੇਮ ਅਤੇ ਸ਼ੁੱਧ ਅਸ਼ੁੱਧ ਸ਼ਬਦ ਬੋਧ

3.3 ਵਿਰੋਧੀ ਸ਼ਬਦ

3.4 ਛੰਦ : ਅਰਥ, ਪਰਿਭਾਸ਼ਾ, ਤੱਤ ਅਤੇ ਕਿਸਮਾਂ

3.5 ਸਾਹਿਤਕ ਸ਼ਬਦਾਵਲੀ (100 ਸ਼ਬਦ ਨਾਲ ਨੱਥੀ ਹਨ)

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਸ. ਸ. ਖਹਿਰਾ **ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਵਿਆਕਰਣ ਅਤੇ ਬਣਤਰ**
ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ

2. ਹਰਕੀਰਤ ਸਿੰਘ **ਪੰਜਾਬੀ ਸ਼ਬਦ ਰੂਪ ਅਤੇ ਸ਼ਬਦ ਜੋੜ ਕੋਸ਼**
ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
3. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ **ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਣ**
ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ, ਪਟਿਆਲਾ, 2006

ਸਾਹਿਤਕ ਸ਼ਬਦਾਵਲੀ (Literary Terminology)

1.	Abstract	ਸੂਖ਼ਮ
2.	Absurd	ਊਲ-ਜਲੂਲ/ ਅਸੰਗਤ
3.	Accent	ਸੁਰਦਬਾ/ਲਹਿਜ਼ਾ
4.	Actor	ਅਦਾਕਾਰ
5.	Adoption	ਅਪਨਾਉਣਾ
6.	Adaptation	ਅਨੁਕੂਲਤਾ/ਰੂਪਾਂਤ੍ਰਣ
7.	Aesthetic	ਸੁਹਜ
8.	Aesthetics	ਸੁਹਜ-ਸ਼ਾਸਤਰ/ ਸੁਹਜਵਾਦ
9.	Analysis	ਵਿਸ਼ਲੇਸ਼ਣ
10.	Annotation	ਟੀਕਾ
11.	Anthologist	ਸੰਗ੍ਰਹਿ-ਕਰਤਾ
12.	Anthology	ਸੰਗ੍ਰਹਿ
13.	Aptitude	ਰੁਚੀ
14.	Architect	ਸ਼ਿਲਪਕਾਰ
15.	Artistically	ਕਲਾ ਪੱਖ ਤੋਂ
16.	Atheism	ਨਾਸਤਿਕਤਾ
17.	Assonance	ਸੁਰ ਸਮਾਨਤਾ
18.	Auditorium	ਸਰੋਤਾ-ਭਵਨ
19.	Autobiography	ਸਵੈਜੀਵਨੀ
20.	Ballad	ਗਾਥਾ
21.	Bibliography	ਪੁਸਤਕ ਸੂਚੀ
22.	Biography	ਜੀਵਨੀ
23.	Blank Verse	ਮੁਕਤ-ਕਾਵਿ
24.	Brevity	ਸੰਖੇਪਤਾ
25.	Brochure	ਪੁਸਤਿਕਾ
26.	Catharsis	ਭਾਵ ਵਿਰੇਚਨ
27.	Characterization	ਪਾਤਰ ਚਿੱਤਰਣ
28.	Chorus	ਸਮੂਹ ਗੀਤ
29.	Chronology	ਕਾਲਕ੍ਰਮ

30.	Clarification	ਸਪੱਸ਼ਟੀਕਰਣ
31.	Climax	ਸਿਖਰ
32.	Comedy	ਸੁਖਾਂਤ
33.	Commentary	ਭਾਸ਼ਣ
34.	Communism	ਸਾਮਵਾਦ
35.	Concept	ਸੰਕਲਪ
36.	Conflict	ਦਵੰਦ
37.	Consonant	ਵਿਅੰਜਨ
38.	Contemporary	ਸਮਕਾਲੀ
39.	Content	ਵਸਤੂ
40.	Criterion	ਕਸੌਟੀ/ ਮਾਪਦੰਡ
41.	Critic	ਆਲੋਚਕ
42.	Critical	ਆਲੋਚਨਾਤਮਿਕ
43.	Cynicism	ਸਨਕੀ ਹੋਣਾ
44.	Definition	ਪਰਿਭਾਸ਼ਾ
45.	Dialect	ਉਪਭਾਸ਼ਾ
46.	Dialogue	ਵਾਰਤਾਲਾਪ
47.	Director	ਨਿਰਦੇਸ਼ਕ
48.	Drama	ਨਾਟਕ
49.	Dramatist	ਨਾਟਕਕਾਰ
50.	Duet Song	ਦੁਗਾਣਾ
51.	Ego	ਹਉਮੈ
52.	Elegy	ਸ਼ੋਕ ਗੀਤ
53.	Element	ਤੱਤ
54.	Eloquence	ਖੁਸ਼-ਬਿਆਨੀ/ ਸੁਭਾਸ਼ਣ
55.	Emotional	ਭਾਵੁਕ/ ਜਜ਼ਬਾਤੀ
56.	Epic	ਮਹਾਂਕਾਵਿ
57.	Essay	ਨਿਬੰਧ
58.	Etymology	ਨਿਰੁਕਤ
59.	Example	ਮਿਸਾਲ/ਉਦਾਹਰਣ
60.	Existentialism	ਹੋਂਦਵਾਦ/ਅਸਤਿਤਵਵਾਦ
61.	Expression	ਪ੍ਰਗਟਾਅ
62.	Expressionism	ਅਭਿਵਿਅੰਜਨਾਵਾਦ
63.	Facility	ਸਹੂਲਤ
64.	Fantasy	ਕਲਪਨਾ
65.	Fatalism	ਭਾਗਵਾਦ/ ਭਰੋਸਾਵਾਦ/ ਹੋਣੀਵਾਦ

66.	Farce	ਸਾਂਗ
67.	Feudalism	ਜਾਗੀਰਦਾਰੀ/ ਸਾਮੰਤਵਾਦ
68.	Fiction	ਗਲਪ
69.	Figure of speech	ਅਲੰਕਾਰ
70.	Folklore	ਲੋਕਧਾਰਾ/ ਲੋਕਯਾਨ
71.	Folksong	ਲੋਕਗੀਤ
72.	Free verse	ਮੁਕਤ-ਕਾਵਿ
73.	Form	ਰੂਪ
74.	Genius	ਪ੍ਰਤਿਭਾਸ਼ੀਲ
75.	Genealogy	ਵੰਸ਼ਾਵਲੀ
76.	Glossary	ਸ਼ਬਦ ਸੂਚੀ
77.	Hereditary	ਪਿਤਾ ਪੁਰਖੀ
78.	Histrionics	ਸਵਾਂਗ ਕਲਾ
79.	Humanism	ਮਾਨਵਵਾਦ
80.	Idea	ਵਿਚਾਰ
81.	Idealism	ਵਿਚਾਰਵਾਦ/ਆਦਰਸ਼ਵਾਦ
82.	Ideology	ਵਿਚਾਰਧਾਰਾ
83.	Illusion	ਭਰਮ
84.	Imagery	ਬਿੰਬਾਵਲੀ
85.	Imagination	ਕਲਪਨਾ
86.	Imitation	ਨਕਲ
87.	Impressionism	ਪ੍ਰਭਾਵਵਾਦ
88.	Impulse	ਮਨੋ-ਤਰੰਗ
89.	Individual	ਵਿਅਕਤੀ
90.	Individualism	ਵਿਅਕਤੀਵਾਦ
91.	Inferiority complex	ਹੀਣ ਭਾਵ
92.	Instinct	ਪ੍ਰਵਿਰਤੀ
93.	Journalism	ਪੱਤਰਕਾਰੀ
94.	Legend	ਦੰਤ ਕਥਾ
95.	Liberalism	ਉਦਾਰਵਾਦ
96.	Linguistics	ਭਾਸ਼ਾ ਵਿਗਿਆਨ
97.	Linguistics continuity	ਭਾਸ਼ਾ ਦੀ ਅਖੰਡਤਾ
98.	Literal	ਸ਼ਾਬਦਿਕ
99.	Literature	ਸਾਹਿਤ
100.	Lyrical Poetry	ਸਰੋਦੀ ਕਾਵਿ

Mapping Matrix of Course B-PBI (E)-CC-301

Mapping: Mapping is a process of representing the correlation between COs and POs, Cos and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (B-PBI (E)-CC-301) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course B-PBI (E)-CC-301

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
B-PBI (E)-CC-301.1	3	2	3	3	3	3	3	3
B-PBI (E)-CC-301.2	3	2	3	3	3	3	3	3
B-PBI (E)-CC-301.3	3	2	3	3	3	3	3	3
B-PBI (E)-CC-301.4	3	2	3	3	2	3	2	3
Average	3	2	3	3	2.75	3	2.75	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (B-PBI (E)-CC-301) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course B-PBI (E)-CC-301

CO	PSO 1	PSO 2	PSO 3	PSO 4
B-PBI (E)-CC-301.1	3	3	3	3
B-PBI (E)-CC-301.2	3	3	3	3
B-PBI (E)-CC-301.3	3	3	3	3
B-PBI (E)-CC-301.4	3	3	3	3
Average	3	3	3	3

Semester : IV

B-PBI (E)-CC-401

ਹਰਿਆਣਾ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ

(Haryana Da Panjabi Sahit Ate Viharak Punjabi)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਕਵਿਤਾ ਦੇ ਸਿਧਾਂਤ/ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਕਵਿਤਾ ਦੇ ਵਿਸ਼ੇ/ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਵਿਤਾਵਾਂ ਦੀ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰ ਦੇ ਹੋਣਗੇ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਨਾਟਕ ਦੇ ਸਿਧਾਂਤ/ ਸਿਲੇਬਸ ਵਿੱਚ ਨਾਟਕ ਦੇ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ/ ਵਿਸ਼ੇ/ ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਸਬੰਧਤ ਨਾਟਕ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਨਾਟਕਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਦੇ ਪੰਜ ਉਪ-ਭਾਗ ਹਨ। ਉਪ-ਭਾਗ ਪਹਿਲਾ ਵਿੱਚ ਕਾਰਕ, ਉਪ-ਭਾਗ ਦੂਜਾ ਵਿੱਚ ਯੋਜਕ, ਉਪ-ਭਾਗ ਤੀਜਾ ਵਿੱਚ ਵਿਸਮਿਕ, ਉਪਭਾਗ ਚੌਥਾ ਵਿੱਚ ਅਲੰਕਾਰ ਅਤੇ ਉਪਭਾਗ ਪੰਜਵਾਂ ਵਿੱਚ ਸਾਹਿਤਕ ਸ਼ਬਦਾਵਲੀ (ਦਿੱਤੇ ਗਏ ਦਸ ਸ਼ਬਦਾਂ ਵਿੱਚੋਂ ਕੋਈ ਛੇ ਸ਼ਬਦ ਕਰਨੇ ਹਨ) ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਉਪ-ਭਾਗ ਛੇ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਹਰਿਆਣੇ ਦੇ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸ, ਇਸਦੇ ਝੁਕਾਵਾਂ ਅਤੇ ਪ੍ਰਮੁੱਖ ਸਾਹਿਤਕਾਰਾਂ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ।
- ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੇ ਅਧਿਐਨ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਪ੍ਰਤੀ ਵਿਸ਼ੇਸ਼ ਸਮਝ ਪੈਦਾ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

B-PBI (E)-CC-401.1 ਹਰਿਆਣਾ ਵਿਚਲੇ ਵੱਖ-ਵੱਖ ਸਾਹਿਤਕਾਰਾਂ ਦੀਆਂ ਰਚਨਾਵਾਂ ਦੇ ਅਧਿਐਨ ਦੁਆਰਾ ਸਾਹਿਤ ਅਧਿਐਨ ਦੀ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।

B-PBI (E)-CC-401.2 ਹਰਿਆਣਾ ਦੇ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਅਧਿਐਨ ਦੁਆਰਾ ਹਰਿਆਣਾ ਵਿੱਚ ਵਸਦੇ ਪੰਜਾਬੀ ਲੋਕਾਂ ਦੀ ਜੀਵਨ-ਜਾਚ ਨੂੰ ਸਮਝਣ ਦੀ ਸੂਝ ਬਣੇਗੀ।

B-PBI (E)-CC-401.3 ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਖੇਤਰੀ ਸਾਹਿਤ ਨੂੰ ਪੜ੍ਹਨ, ਸਮਝਣ ਦੀ ਰੁਚੀ ਪੈਦਾ ਹੋਵੇਗੀ।

B-PBI (E)-CC-401.4 ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੀ ਪੜ੍ਹਾਈ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਸੰਰਚਨਾ ਅਤੇ ਵਰਤੋਂ ਵਿਹਾਰ ਬਾਰੇ ਸਮਝ ਅਤੇ ਮੁਹਾਰਤ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ (ਕਵਿਤਾ)

1. ***ਪਰਵਾਜ਼***, ਰਤਨ ਸਿੰਘ ਢਿੱਲੋਂ, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2012

1.1 ਕਵਿਤਾ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤਕਨੀਕ

1.2 ਹਰਿਆਣਾ ਦੀ ਪੰਜਾਬੀ ਕਵਿਤਾ : ਜਨਮ ਤੇ ਸੰਖੇਪ ਇਤਿਹਾਸ

1.3 ਹਰਿਆਣਾ ਦੀ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦੇ ਪ੍ਰਮੁੱਖ ਰੂਪ

1.4 ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ

1.5 ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ

1.6 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਦੂਜਾ (ਕਹਾਣੀ)

2. ***ਤੂੰ ਮੇਰਾ ਕੀ ਲੱਗਦੈਂ,*** ਕੁਲਦੀਪ ਸਿੰਘ ਦੀਪ, ਅਦਬੀ ਪ੍ਰਵਾਜ਼ ਪ੍ਰਕਾਸ਼ਨ, ਮਾਨਸਾ, 2016

2.1 ਨਾਟਕ : ਅਰਥ, ਪਰਿਭਾਸ਼ਾ, ਤੱਤ ਅਤੇ ਰੂਪਾਕਾਰਕ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

2.2 ਹਰਿਆਣਾ ਦਾ ਪੰਜਾਬੀ ਨਾਟਕ : ਜਨਮ ਅਤੇ ਸੰਖੇਪ ਇਤਿਹਾਸ

2.3 ਵਿਸ਼ਾ ਵਸਤੂ ਅਤੇ ਸਰੋਕਾਰ

2.4 ਆਲੋਚਨਾਤਕ ਅਧਿਐਨ

2.5 ਪਾਤਰ ਵਿਧਾਨ

2.6 ਨਾਟਕੀ ਜੁਗਤਾਂ/ ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ

2.7 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਤੀਜਾ (ਵਿਹਾਰਕ ਪੰਜਾਬੀ)

3. ਵਿਹਾਰਕ ਪੰਜਾਬੀ

3.1 ਕਾਰਕ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਕਿਸਮਾਂ

3.2 ਯੋਜਕ : ਪਰਿਭਾਸ਼ਾ, ਕਿਸਮਾਂ ਅਤੇ ਵਰਤੋਂ

3.3 ਵਿਸਮਿਕ : ਪਰਿਭਾਸ਼ਾ, ਕਿਸਮਾਂ ਅਤੇ ਵਰਤੋਂ

3.4 ਅਲੰਕਾਰ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਕਿਸਮਾਂ

3.5 ਸਾਹਿਤਕ ਸ਼ਬਦਾਵਲੀ (100 ਸ਼ਬਦ ਨਾਲ ਨੱਥੀ ਹਨ)

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਅਮਰਜੀਤ ਸਿੰਘ ਕਾਂਗ, **ਹਰਿਆਣਾ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ**, ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ
2. ਅਮਰਜੀਤ ਸਿੰਘ ਕਾਂਗ ਅਤੇ ਹਿੰਮਤ ਸਿੰਘ ਸੋਢੀ (ਸੰਪਾ.), **ਹਰਿਆਣਾ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ ਨੂੰ ਯੋਗਦਾਨ** ਹਰਿਆਣਾ ਸਾਹਿਤ ਅਕਾਦਮੀ, ਚੰਡੀਗੜ੍ਹ
3. ਸ. ਸ. ਖਹਿਰਾ, **ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਵਿਆਕਰਣ ਅਤੇ ਬਣਤਰ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
4. ਹਰਕੀਰਤ ਸਿੰਘ, **ਪੰਜਾਬੀ ਸ਼ਬਦ ਰੂਪ ਅਤੇ ਸ਼ਬਦ ਜੋੜ ਕੋਸ਼**, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
5. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ, **ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਣ,** ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ, ਪਟਿਆਲਾ, 2006
6. ਗੁਰਦਿਆਲ ਸਿੰਘ , **ਹਰਿਆਣਾ ਦੀ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦਾ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ, 2011

ਸਾਹਿਤਕ ਸ਼ਬਦਾਵਲੀ (Literary Terminology)

1.	Morphology	ਰੂਪ ਵਿਗਿਆਨ, ਭਾਵਾਂਸ਼ ਵਿਗਿਆਨ
2.	Maxim	ਕਹਾਵਤ
3.	Melodious	ਮਧੁਰ
4.	Metaphor	ਰੂਪਕ
5.	Metaphysical	ਪਰਾਭੌਤਿਕ
6.	Meter	ਛੰਦ
7.	Modernity	ਆਧੁਨਿਕਤਾ
8.	Modernism	ਆਧੁਨਿਕਤਾਵਾਦ
9.	Monologue	ਮਨਵਚਨ ਜਾਂ ਇਕਵਚਨੀ
10.	Mystical	ਰਹੱਸਮਈ
11.	Mysticism	ਰਹੱਸਵਾਦ
12.	Mythology	ਮਿਥਿਹਾਸ
13.	Nationalism	ਰਾਸ਼ਟਰਵਾਦ
14.	Naturalism	ਪ੍ਰਕਿਰਤੀਵਾਦ
15.	Note	ਟਿੱਪਣੀ
16.	Novelist	ਨਾਵਲਕਾਰ
17.	Novelette	ਛੋਟਾ ਨਾਵਲ
18.	Obsolete	ਅਪ੍ਰਚਲਿਤ
19.	Obscene	ਅਸ਼ਲੀਲ
20.	Opera	ਸੰਗੀਤ ਨਾਟਕ
21.	Optimist	ਆਸ਼ਾਵਾਦੀ
22.	Originality	ਮੌਲਿਕਤਾ
23.	Orthodox	ਕੱਟੜਪੰਥੀ
24.	Paradox	ਵਿਰੋਧਾਭਾਸ
25.	Paragraph	ਪੈਰ੍ਹਾ
26.	Parody	ਨਕਲ, ਵਿਅੰਗ ਕਾਵਿ
27.	Pathetic	ਭਾਵ ਭਰਮ
28.	Pathos	ਕਰੁਣਾ ਰਸ
29.	Personality	ਵਿਅਕਤੀਤਵ
30.	Personification	ਸਮੂਰਤੀਕਰਨ
31.	Pessimist	ਨਿਰਾਸ਼ਾਵਾਦੀ
32.	Philologist	ਭਾਸ਼ਾ ਸ਼ਾਸਤਰੀ
33.	Phoneme	ਧੁਨੀਗ੍ਰਾਮ
34.	Phonetic law	ਧੁਨੀ ਨਿਯਮ

35.	Phonology	ਧੁਨੀ ਵਿਗਿਆਨ
36.	Playwright	ਨਾਟਕਕਾਰ
37.	Poetical Insight	ਕਾਵਿਕ ਸੂਝ
38.	Poetical Effect	ਕਾਵਿਕ ਪ੍ਰਭਾਵ
39.	Polyglot	ਬਹੁਭਾਸ਼ੀ
40.	Suffix	ਪਿਛੇਤਰ
41.	Prefix	ਅਗੇਤਰ
42.	Progressive	ਪ੍ਰਗਤੀਸ਼ੀਲ/ਅਗਾਂਹਵਧੂ
43.	Prose	ਵਾਰਤਕ
44.	Producer	ਨਿਰਮਾਤਾ
45.	Production	ਪੇਸ਼ਕਾਰੀ
46.	Prosody	ਪਿੰਗਲ
47.	Psycho-Analysis	ਮਨੋਵਿਸ਼ਲੇਸ਼ਣ
48.	Realism	ਯਥਾਰਥਵਾਦ
49.	Rhetoric	ਅਲੰਕਾਰ ਸ਼ਾਸਤਰ
50.	Rhyme	ਬਾਲਗੀਤ
51.	Rhythm	ਲੈਅ
52.	Romanticism	ਰੁਮਾਂਸਵਾਦ
53.	Satire	ਵਿਅੰਗ
54.	Skepticism	ਸ਼ੰਕਾਵਾਦ
55.	Script	ਲਿਪੀ
56.	Secularism	ਧਰਮ ਨਿਰਪੇਖਤਾ
57.	Semantics	ਅਰਥ ਵਿਗਿਆਨ
58.	Sensibility	ਸੰਵੇਦਨਾ
59.	Sensitivity	ਸੰਵੇਦਨਸ਼ੀਲਤਾ
60.	Smile	ਉਪਮਾ
61.	Size	ਆਕਾਰ
62.	Socialism	ਸਮਾਜਵਾਦ
63.	Soliloquy	ਇਕੋਵਚਨ/ ਮਨੋਵਚਨੀ
64.	Spiritualism	ਅਧਿਆਤਮਵਾਦ
65.	Stage	ਰੰਗ-ਮੰਚ
66.	Stream of consciousness	ਚੇਤਨਾ ਪ੍ਰਵਾਹ
67.	Structure	ਸੰਰਚਨਾ/ਬਣਤਰ
68.	Style	ਸ਼ੈਲੀ
69.	Sublime	ਉਦਾਤ
70.	Syllable	ਅੱਖਰ

71.	Symbolism	ਪ੍ਰਤੀਕਵਾਦ
72.	Synopsis	ਆਰਜ਼ੀ ਰੂਪ-ਰੇਖਾ
73.	Syntax	ਵਾਕ-ਰਚਨਾ/ਵਾਕ-ਵਿਚਾਰ
74.	Synthesis	ਸੰਸ਼ਲੇਸ਼ਣ
75.	Tactile image	ਸਪਰਸ਼-ਬਿੰਬ
76.	Technique	ਵਿਧੀ
77.	Terminology	ਪਾਰਿਭਾਸ਼ਿਕ ਸ਼ਬਦਾਵਲੀ
78.	Tradition	ਪਰੰਪਰਾ
79.	Traditionalism	ਪਰੰਪਰਾਵਾਦ
80.	Translation	ਅਨੁਵਾਦ
81.	Treatise	ਨਿਬੰਧ
82.	Unities	ਏਕਤਾਵਾਂ
83.	Unity of action	ਕਾਰਜ਼ ਦੀ ਏਕਤਾ
84.	Unity of Impression	ਪ੍ਰਭਾਵ ਦੀ ਏਕਤਾ
85.	Unity of Space	ਸਥਾਨ ਦੀ ਏਕਤਾ
86.	Unity of Time	ਸਮੇਂ ਦੀ ਏਕਤਾ
87.	Utilitarianism	ਉਪਯੋਗਤਾਵਾਦ
88.	Verse	ਪਦ
89.	Versatile	ਸਰਬਾਗੀ
90.	Villain	ਖਲਨਾਇਕ
91.	Vision	ਅੰਤਰ-ਦ੍ਰਿਸ਼ਟੀ
92.	Visual Image	ਦ੍ਰਿਸ਼ਟੀ ਪਰਤ, ਬਿੰਬ
93.	Vocabulary	ਸ਼ਬਦ-ਕੋਸ਼
94.	Vowel	ਸਵਰ
95.	Vulgarity	ਅਸ਼ਲੀਲਤਾ
96.	Work	ਕਾਰਜ, ਕੰਮ, ਰਚਨਾ

Mapping Matrix of Course B-PBI (E)-CC-401

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (B-PBI (E)-CC-401) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course B-PBI (E)-CC-401

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
B-PBI (E)-CC-401.1	3	2	3	2	3	2	3	3
B-PBI (E)-CC-401.2	3	3	3	2	3	3	3	3
B-PBI (E)-CC-401.3	3	3	3	2	3	2	3	3
B-PBI (E)-CC-401.4	3	3	3	2	3	2	3	3
Average	**3**	**2.75**	**3**	**2**	**3**	**2.25**	**3**	**3**

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (B-PBI (E)-CC-401) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the CourseB-PBI (E)-CC-401

CO	PSO 1	PSO 2	PSO 3	PSO 4
B-PBI (E)-CC-401.1	3	3	3	2
B-PBI (E)-CC-401.2	3	3	3	3
B-PBI (E)-CC-401.3	3	2	3	3
B-PBI (E)-CC-401.4	3	3	3	2
Average	**3**	**2.75**	**3**	**2**

Semester : V
B-PBI (E)-DSE-501

ਪੰਜਾਬੀ ਦਲਿਤ ਸਾਹਿਤ
(Punjabi Dalit Sahit)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਦਲਿਤ ਅਤੇ ਦਲਿਤ ਚੇਤਨਾ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਦਾ ਪਹਿਲਾ ਸੁਆਲ ਕਵਿਤਾ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਦਲਿਤ ਦ੍ਰਿਸ਼ਟੀ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਹੋਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਵਿਤਾਵਾਂ ਦੀ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਦਾ ਪਹਿਲਾ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀਆਂ ਕਹਾਣੀਆਂ ਦੇ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ/ ਵਿਸ਼ੇ/ ਦਲਿਤ ਚੇਤਨਾ/ ਸਮੱਸਿਆ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਹਾਣੀਆਂ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਹਾਣੀਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰ ਦੇ ਹੋਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਦਲਿਤ, ਦਲਿਤ ਚੇਤਨਾ, ਦਲਿਤ ਸਾਹਿਤ ਅਤੇ ਦਲਿਤ ਸਰੋਕਾਰਾਂ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

B-PBI (E)-DSE-501.1 ਵਿਦਿਆਰਥੀ ਦਲਿਤ ਅਤੇ ਦਲਿਤ ਚੇਤਨਾ ਨਾਲ ਸਬੰਧਤ ਵਿਭਿੰਨ ਸੰਕਲਪਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

B-PBI (E)-DSE-501.2 ਵਿਦਿਆਰਥੀਆਂ ਦਾ ਦਲਿਤ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸ, ਇਸਦੇ ਝੁਕਾਵਾਂ ਅਤੇ ਪ੍ਰਮੁੱਖ ਸਾਹਿਤਕਾਰਾਂ ਨਾਲ ਪਰਿਚੈ ਹੋਵੇਗਾ।

B-PBI (E)-DSE-501.3 ਦਲਿਤਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਮੁੱਖ ਸਰੋਕਾਰਾਂ ਨਾਲ ਜਾਣ-ਪਛਾਣ ਹੋਵੇਗੀ।

B-PBI (E)-DSE-501.4 ਦਲਿਤਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਜ਼ਰੀਏ ਪੰਜਾਬੀ ਦਲਿਤ ਦੀ ਅੰਤਰਮਨ ਸੰਵੇਦਨਾ ਨੂੰ ਸਮਝਣ ਦੀ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ : (ਦਲਿਤ ਅਤੇ ਦਲਿਤ ਚਿੰਤਨ)

1. ਦਲਿਤ ਅਤੇ ਦਲਿਤ ਚਿੰਤਨ : ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ
1.1 ਦਲਿਤ ਅਤੇ ਦਲਿਤ ਚੇਤਨਾ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਸਰੂਪ
1.2 ਭਾਰਤੀ ਜਾਤੀ ਅਤੇ ਵਰਣ ਵੰਡ
1.3 ਦਲਿਤ ਦ੍ਰਿਸ਼ਟੀ : ਮਾਰਕਸਵਾਦ, ਅੰਬੇਦਕਰਵਾਦ
1.4 ਪੰਜਾਬੀ ਕੌਮ, ਦਲਿਤ ਮੁਕਤੀ ਅਤੇ ਸ਼ਕਤੀਕਰਨ
1.5 ਦਲਿਤ ਚੇਤਨਾ ਅਤੇ ਪੰਜਾਬ ਵਿੱਚ ਸਮਾਜਿਕ ਪਰਿਵਰਤਨ
1.6 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਦੂਜਾ (ਦਲਿਤ ਕਵਿਤਾ)

2. ਸੰਤ ਰਾਮ ਉਦਾਸੀ, ***ਕੰਮੀਆਂ ਦਾ ਵਿਹੜਾ***, ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ, 1987
2.1 ਵਿਸ਼ਾ ਵਸਤੂ ਅਤੇ ਸਰੋਕਾਰ
2.2 ਦਲਿਤ ਚੇਤਨਾ
2.3 ਕਲਾਤਮਕ ਪੱਖ
2.4 ਕਵਿਤਾ ਦਾ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ
2.5 ਕਵੀ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ
2.6 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਤੀਜਾ (ਦਲਿਤ ਕਹਾਣੀ)

3. ਅਤਰਜੀਤ, ***ਸਬੂਤੇ ਕਦਮ***, ਬਲਰਾਜ ਸਾਹਨੀ ਯਾਦਗਾਰੀ ਪ੍ਰਕਾਸ਼ਨ, ਬਠਿੰਡਾ, 2009
3.1 ਵਿਸ਼ਾ ਵਸਤੂ
3.2 ਕਲਾਤਮਕ ਜੁਗਤਾਂ
3.3 ਦਲਿਤ ਚੇਤਨਾ
3.4 ਸਰੋਕਾਰ ਅਤੇ ਵਿਚਾਰਧਾਰਾ
3.5 ਕਹਾਣੀਕਾਰ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ
3.6 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਸਤਿੰਦਰ ਸਿੰਘ ਨੂਰ ਅਤੇ ਪ੍ਰੀਤਮ ਸਿੰਘ ਬੱਤਰਾ (ਸੰਪਾ.), **ਦਲਿਤ ਚੇਤਨਾ ਅਤੇ ਸਾਹਿਤ**, ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ
2. ਸਰਬਜੀਤ ਸਿੰਘ, **ਦਲਿਤ ਦ੍ਰਿਸ਼ਟੀ**, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2004
3. ਸੰਤੋਖ ਸਿੰਘ, **ਭਾਰਤ ਵਿੱਚ ਜਾਤ ਅਤੇ ਜਮਾਤ**, ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2013
4. ਪਰਮਜੀਤ ਕੌਰ ਸਿੱਧੂ, **ਪੰਜਾਬੀ ਕਹਾਣੀ ਵਿੱਚ ਦਲਿਤ ਸਰੋਕਾਰ**, ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ
5. ਭੀਮਇੰਦਰ ਸਿੰਘ, **ਦਲਿਤ ਚਿੰਤਨ : ਮਾਰਕਸੀ ਪਰਿਪੇਖ**, ਕੰਕਰ ਪ੍ਰਕਾਸ਼ਨ, ਜਲੰਧਰ
6. ਰੌਣਕੀ ਰਾਮ, **ਦਲਿਤ ਚੇਤਨਾ : ਸਰੋਤ ਤੇ ਸਰੂਪ**, ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2010
7. ਰੌਣਕੀ ਰਾਮ, **ਦਲਿਤ ਪਛਾਣ : ਮੁਕਤੀ ਤੇ ਸ਼ਕਤੀਕਰਨ**, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2012

Mapping Matrix of Course B-PBI (E)-DSE-501

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (B-PBI (E)-DSE-501) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course B-PBI (E)-DSE-501

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
B-PBI (E)-DSE-501.1	3	3	3	2	3	2	3	3
B-PBI (E)-DSE-501.2	3	3	3	2	3	2	3	3
B-PBI (E)-DSE-501.3	3	3	3	2	3	2	3	3
B-PBI (E)-DSE-501.4	3	3	3	2	3	2	3	3
Average	3	3	3	2	3	2	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (B-PBI (E)-DSE-501) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the CourseB-PBI (E)-DSE-501

CO	PSO 1	PSO 2	PSO 3	PSO 4
B-PBI (E)-DSE-501.1	3	3	3	3
B-PBI (E)-DSE-501.2	3	3	3	3
B-PBI (E)-DSE-501.3	3	3	3	3
B-PBI (E)-DSE-501.4	3	3	3	2
Average	3	3	3	2.75

Semester : V
B-PBI (E)-DSE-502

ਪੰਜਾਬੀ ਨਾਰੀ ਸਾਹਿਤ
(Punjabi Nari Sahit)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਨਾਰੀ ਅਤੇ ਨਾਰੀ ਚੇਤਨਾ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਦਾ ਪਹਿਲਾ ਸੁਆਲ ਕਵਿਤਾ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਨਾਰੀ ਚੇਤਨਾ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਵਿਤਾਵਾਂ ਦੀ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵਿੱਤਰੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਦਾ ਪਹਿਲਾ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀਆਂ ਕਹਾਣੀਆਂ ਦੇ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ/ ਵਿਸ਼ੇ/ ਨਾਰੀ ਚੇਤਨਾ/ ਸਮੱਸਿਆ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਹਾਣੀਆਂ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਹਾਣੀਕਾਰਾ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਨਾਰੀਵਾਦ, ਨਾਰੀ ਸਾਹਿਤ ਅਤੇ ਨਾਰੀ ਸਰੋਕਾਰਾਂ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

B-PBI (E)-DSE-502.1 ਵਿਦਿਆਰਥੀ ਨਾਰੀ ਅਤੇ ਨਾਰੀ ਚੇਤਨਾ ਨਾਲ ਸਬੰਧਤ ਵਿਭਿੰਨ ਸੰਕਲਪਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

B-PBI (E)-DSE-502.2 ਵਿਦਿਆਰਥੀਆਂ ਦਾ ਨਾਰੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸ, ਇਸਦੇ ਝੁਕਾਵਾਂ ਅਤੇ ਪ੍ਰਮੁੱਖ ਸਾਹਿਤਕਾਰਾਂ ਨਾਲ ਪਰਿਚੈ ਹੋਵੇਗਾ।

B-PBI (E)-DSE-502.3 ਨਾਰੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਮੁੱਖ ਸਰੋਕਾਰਾਂ ਨਾਲ ਜਾਣ-ਪਛਾਣ ਹੋਵੇਗੀ।

B-PBI (E)-DSE-502.4 ਨਾਰੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਜ਼ਰੀਏ ਪੰਜਾਬੀ ਔਰਤ ਦੀ ਅੰਤਰਮਨ ਸੰਵੇਦਨਾ ਨੂੰ ਸਮਝਣ ਦੀ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ : (ਨਾਰੀ ਵਾਦ)

1. ਨਾਰੀ ਵਾਦ : ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ
1.1 ਨਾਰੀ ਵਾਦ : ਪਰਿਭਾਸ਼ਾ ਵਿਕਾਸ ਅਤੇ ਮੰਤਵ
1.2 ਨਾਰੀ ਵਾਦ ਅਤੇ ਨਾਰੀ ਮੁਕਤੀ ਮਾਡਲ
1.3 ਨਾਰੀ ਲਿਖਤ ਦਾ ਮਸਲਾ
1.4 ਭਾਰਤੀ ਨਾਰੀ ਅਤੇ ਨਾਰੀਵਾਦ
1.5 ਪੰਜਾਬੀ ਸਾਹਿਤ ਅਤੇ ਨਾਰੀਵਾਦ
1.6 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਦੂਜਾ (ਨਾਰੀ ਕਵਿਤਾ)

2. ਪਾਲ ਕੌਰ, ***ਇੰਝ ਨਾ ਮਿਲੀਂ***, ਆਰਸੀ ਪਬਲਿਸ਼ਰਜ਼, ਦਿੱਲੀ, 1999
2.1 ਨਾਰੀ ਸੰਵੇਦਨਾ
2.2 ਕਾਵਿ ਜੁਗਤਾਂ
2.3 ਵਿਹਾਰਕ ਸਮੀਖਿਆ
2.4 ਕਾਵਿ ਸਰੋਕਾਰ
2.5 ਕਵਿੱਤਰੀ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ
2.6 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਤੀਜਾ (ਨਾਰੀ ਕਹਾਣੀ)

3. ਨਿਰਮਲ ਜਸਵਾਲ, ***ਮੱਛੀਆਂ ਕੱਚ ਦੀਆਂ***, ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2004
3.1 ਵਿਸ਼ਾ ਵਸਤੂ
3.2 ਕਲਾਤਮਕ ਜੁਗਤਾਂ
3.3 ਨਾਰੀ ਸੰਵੇਦਨਾ
3.4 ਸਰੋਕਾਰ ਅਤੇ ਵਿਚਾਰਧਾਰਾ
3.5 ਲੇਖਿਕਾ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ
3.6 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਅਰਵਿੰਦਰਪਾਲ ਕੌਰ, **ਨਾਰੀ ਕਾਵਿ-ਚਿੰਤਨ,** ਵਾਰਿਸ ਸ਼ਾਹ ਫ਼ਾਊਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ
2. ਆਸ਼ਾ ਕੌਸ਼ਿਕ, **ਨਾਰੀ ਸ਼ਸ਼ਕਤੀਕਰਣ : ਵਿਮਰਸ਼ ਏਵਮ ਯਥਾਰਥ,** ਪੁਆਇੰਟਰ ਪਬਲਿਸ਼ਰ, ਜੈਪੁਰ, 2004
3. ਹਰਪ੍ਰੀਤ ਕੌਰ, **ਨਾਰੀਵਾਦ,** ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ
4. ਮਾਨਚੰਦ ਖੰਡੇਲਾ, **ਮਹਿਲਾ ਔਰ ਬਦਲਤਾ ਸਮਾਜਿਕ ਪਰਿਵੇਸ਼,** ਅਵਿਸ਼ਕਾਰ ਪਬਲਿਸ਼ਰ, ਜੈਪੁਰ, 2012
5. ਰਵਿੰਦਰ ਕੁਮਾਰ, **ਔਰਤ ਤੇ ਦਲਿਤ ਹਾਸ਼ੀਆਗਤ ਪ੍ਰਵਚਨ : ਨਵ-ਇਤਿਹਾਸਵਾਦੀ ਪਰਿਪੇਖ,** ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2005
6. ਵਨੀਤਾ, **ਨਾਰੀਵਾਦ ਤੇ ਸਾਹਿਤ,** ਅਜੰਤਾ ਬੁੱਕਸ ਇੰਟਰਨੈਸ਼ਨਲ, ਦਿੱਲੀ, 2002

Mapping Matrix of Course B-PBI (E)-DSE-502

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (B-PBI (E)-DSE-502) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course B-PBI (E)-DSE-502

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
B-PBI (E)-DSE-502.1	3	3	3	2	3	2	3	3
B-PBI (E)-DSE-502.2	3	3	3	2	3	2	3	3
B-PBI (E)-DSE-502.3	3	3	3	2	3	2	3	3
B-PBI (E)-DSE-502.4	3	3	3	2	3	2	3	3
Average	3	3	3	2	3	2	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (B-PBI (E)-DSE-502) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course B-PBI (E)-DSE-502

CO	PSO 1	PSO 2	PSO 3	PSO 4
B-PBI (E)-DSE-502.1	3	3	3	3
B-PBI (E)-DSE-502.2	3	3	3	3
B-PBI (E)-DSE-502.3	3	3	3	3
B-PBI (E)-DSE-502.4	3	3	3	2
Average	3	3	3	2.75

Semester : V

B-PBI (E)-GE-503

ਗੁਰਬਾਣੀ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ
(Gurbani ate Viharak Punjabi)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਗੁਰਬਾਣੀ, ਗੁਰਮਤਿ ਰੂਪਾਕਾਰ ਆਦਿ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਇੱਕ ਸੁਆਲ ਵਾਰ ਕਾਵਿ ਦੇ ਸਿਧਾਂਤ ਬਾਰੇ/ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਵਾਰ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਕਲਾਤਮਕ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਵਾਰ ਵਿੱਚੋਂ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਦੇ ਪੰਜ ਉਪ-ਭਾਗ ਹਨ। ਉਪ-ਭਾਗ ਪਹਿਲਾ ਵਿੱਚ ਵਾਕ, ਵਾਕੰਸ਼ ਅਤੇ ਉਪਵਾਕ, ਉਪ-ਭਾਗ ਦੂਜਾ ਵਿੱਚ ਪੰਜਾਬੀ ਵਾਕ ਵੰਡ, ਉਪਭਾਗ ਤੀਜਾ ਵਿੱਚ ਵਾਕ ਰਚਨਾ ਦੇ ਜ਼ਰੂਰੀ ਅੰਗ, ਉਪਭਾਗ ਚੌਥਾ ਵਿੱਚ ਪੰਜਾਬੀ ਵਾਕ ਤਰਤੀਬ ਅਤੇ ਉਪ-ਭਾਗ ਪੰਜਵਾਂ ਵਿੱਚ ਵਾਕ ਸ਼ੁੱਧੀ ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਉਪ-ਭਾਗ ਛੇ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਗੁਰਬਾਣੀ ਦੇ ਹਵਾਲੇ ਨਾਲ ਗੁਰਮਤਿ ਕਾਵਿ ਪਰੰਪਰਾ ਅਤੇ ਗੁਰਮਤਿ ਸਿਧਾਂਤ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ।
- ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੇ ਅਧਿਐਨ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਪ੍ਰਤੀ ਵਿਸ਼ੇਸ਼ ਸਮਝ ਪੈਦਾ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

B-PBI (E)-GE-503.1 ਵਿਦਿਆਰਥੀ ਗੁਰਮਤਿ ਕਾਵਿ ਦੇ ਵਿਭਿੰਨ ਰੂਪਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

B-PBI (E)-GE-503.2 ਗੁਰਮਤਿ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਵਿੱਚ ਗੁਰਬਾਣੀ ਦੀ ਸਮਕਾਲੀ ਪ੍ਰਸੰਗਿਕਤਾ ਅਤੇ ਮਹੱਤਵ ਪ੍ਰਤੀ ਸਮਝ ਪੈਦਾ ਹੋਵੇਗੀ।

B-PBI (E)-GE-503.3 ਵਿਦਿਆਰਥੀ ਗੁਰੂ ਗ੍ਰੰਥ ਸਾਹਿਬ ਦੀ ਸੰਪਾਦਨ ਕਲਾ, ਸਾਹਿਤਕ ਅਤੇ ਸਮਾਜਿਕ-ਸਭਿਆਚਾਰਕ ਮਹੱਤਵ ਨੂੰ ਸਮਕਾਲੀ ਪ੍ਰਸੰਗ ਵਿੱਚ ਸਮਝਣ ਦੇ ਯੋਗ ਹੋਣਗੇ।

B-PBI (E)-GE-503.4 ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੀ ਪੜ੍ਹਾਈ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਸੰਰਚਨਾ ਅਤੇ ਵਰਤੋਂ ਵਿਹਾਰ ਬਾਰੇ ਸਮਝ ਅਤੇ ਮੁਹਾਰਤ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ (ਸਿਧਾਂਤਕ ਪੱਖ)

1. ਗੁਰਬਾਣੀ : ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ
1.1 ਗੁਰਮਤਿ ਕਾਵਿ ਪਰੰਪਰਾ
1.2 ਗੁਰਬਾਣੀ ਅਤੇ ਕਵਿਤਾ ਵਿਚਲਾ ਅੰਤਰ
1.3 ਗੁਰਬਾਣੀ ਵਿਚਾਰਧਾਰਾ
1.4 ਨਿੱਤਨੇਮ ਦੀਆਂ ਬਾਣੀਆਂ
1.5 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਦੂਜਾ (ਗੁਰਮਤਿ ਕਾਵਿ)

2. ਗੁਰੂ ਨਾਨਕ ਦੇਵ, **ਆਸਾ ਦੀ ਵਾਰ**
2.1 ਵਿਸ਼ੈਗਤ ਅਧਿਐਨ
2.2 ਕਲਾਤਮਕ ਪੱਖ
2.3 ਵਾਰ ਦੇ ਤੌਰ 'ਤੇ ਪਰਖ
2.4 ਪਉੜੀ ਪ੍ਰਬੰਧ
2.5 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਤੀਜਾ (ਵਿਹਾਰਕ ਪੰਜਾਬੀ)

3. ਵਿਹਾਰਕ ਪੰਜਾਬੀ
3.1 ਵਾਕ, ਵਾਕੰਸ਼ ਅਤੇ ਉਪਵਾਕ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਰੂਪ
3.2 ਪੰਜਾਬੀ ਵਾਕ ਵੰਡ : ਆਧਾਰ ਅਤੇ ਕਿਸਮਾਂ
3.3 ਵਾਕ ਰਚਨਾ ਦੇ ਜ਼ਰੂਰੀ ਅੰਗ : ਉਦੇਸ਼ ਤੇ ਵਿਧੇਅ
3.4 ਪੰਜਾਬੀ ਵਾਕ ਤਰਤੀਬ
3.5 ਵਾਕ ਸ਼ੁੱਧੀ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਨ, ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ
2. ਹਰਭਜਨ ਸਿੰਘ, ਪਾਰਗਾਮੀ, ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ
3. ਕਰਤਾਰ ਸਿੰਘ, ਨਵੀਨ ਪੰਜਾਬੀ ਪਿੰਗਲ, ਲਾਹੌਰ ਬੁੱਕ ਸ਼ਾਪ, ਲੁਧਿਆਣਾ
4. ਪਿਆਰਾ ਸਿੰਘ, ਮੱਧਕਾਲੀਨ ਪੰਜਾਬੀ ਕਵਿਤਾ : ਸਿਧਾਂਤ, ਇਤਿਹਾਸ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ, ਨਿਊ ਬੁੱਕ ਕੰਪਨੀ, ਜਲੰਧਰ

Mapping Matrix of Course B-PBI (E)-GE-503

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (B-PBI (E)-GE-503) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course B-PBI (E)-GE-503

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
B-PBI (E)-GE-503.1	3	2	3	2	3	2	3	3
B-PBI (E)-GE-503.2	3	3	3	2	3	2	3	3
B-PBI (E)-GE-503.3	3	3	3	2	3	2	3	3
B-PBI (E)-GE-503.4	3	3	3	2	3	2	3	3
Average	**3**	**2.75**	**3**	**2**	**3**	**2**	**3**	**3**

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (B-PBI (E)-GE-503) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the CourseB-PBI (E)-GE-503

CO	PSO 1	PSO 2	PSO 3	PSO 4
B-PBI (E)-GE-503.1	3	2	3	3
B-PBI (E)-GE-503.2	3	3	3	3
B-PBI (E)-GE-503.3	3	3	3	3
B-PBI (E)-GE-503.4	3	3	3	2
Average	**3**	**2.75**	**3**	**2.75**

Semester : VI
B-PBI (E)-DSE 601

ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ
(Parvasi Punjabi Sahit)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਪਰਵਾਸ ਅਤੇ ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਦਾ ਪਹਿਲਾ ਸੁਆਲ ਕਵਿਤਾ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਪਰਵਾਸੀ ਚੇਤਨਾ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਕਵੀ ਦੀਆਂ ਕਵਿਤਾਵਾਂ ਦੀ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਦਾ ਪਹਿਲਾ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀਆਂ ਕਹਾਣੀਆਂ ਦੇ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ/ ਵਿਸ਼ੇ/ ਪਰਵਾਸੀ ਚੇਤਨਾ/ ਸਮੱਸਿਆ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਹਾਣੀਆਂ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਹਾਣੀਕਾਰਾ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਦਾ ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸ, ਇਸਦੇ ਝੁਕਾਵਾਂ ਅਤੇ ਪ੍ਰਮੁੱਖ ਸਾਹਿਤਕਾਰਾਂ ਨਾਲ ਪਰਿਚੈ ਕਰਾਉਣਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

B-PBI (E)-DSE 601.1 ਪਰਵਾਸੀ ਚੇਤਨਾ ਦੇ ਹਵਾਲੇ ਨਾਲ ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਮੁੱਖ ਸਰੋਕਾਰਾਂ ਨਾਲ ਜਾਣ-ਪਛਾਣ ਹੋਵੇਗੀ।

B-PBI (E)-DSE 601.2 ਵਿਦਿਆਰਥੀ ਪਰਵਾਸੀ ਸਾਹਿਤਕਾਰਾਂ ਦੀਆਂ ਰਚਨਾਵਾਂ ਦੇ ਹਵਾਲੇ ਨਾਲ ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਜੀਵਨ, ਸਭਿਆਚਾਰ, ਸੋਚ ਅਤੇ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਸਮਝਣ ਦੇ ਯੋਗ ਹੋਣਗੇ।

B-PBI (E)-DSE 601.3 ਵਿਦਿਆਰਥੀ ਪਰਵਾਸੀ ਅਤੇ ਪਰਵਾਸੀ ਚੇਤਨਾ ਨਾਲ ਸਬੰਧਤ ਵਿਭਿੰਨ ਸੰਕਲਪਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

B-PBI (E)-DSE 601.4 ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਜ਼ਰੀਏ ਪਰਵਾਸੀ ਪੰਜਾਬੀਆਂ ਦੀ ਅੰਤਰਮਨ ਸੰਵੇਦਨਾ ਨੂੰ ਸਮਝਣ ਦੀ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ : (ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ)

1. ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ : ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ

1.1 ਪਰਵਾਸ ਅਤੇ ਪਰਵਾਸੀ ਚੇਤਨਾ

1.2 ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ : ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ

1.3 ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ : ਮੂਲ ਸਰੋਕਾਰ

1.4 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਦੂਜਾ (ਪਰਵਾਸੀ ਕਵਿਤਾ)

2. ਮਹਿੰਦਰ ਗਿੱਲ, ***ਬਿਨ ਬਰਸਾਤੀ ਮੇਘਲੇ***, ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2017

2.1 ਕਵਿਤਾ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਤੱਤ ਅਤੇ ਰੂਪਾਕਾਰਕ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

2.2 ਪਰਵਾਸੀ ਚੇਤਨਾ

2.3 ਕਾਵਿ ਜੁਗਤਾਂ

2.4 ਵਿਹਾਰਕ ਸਮੀਖਿਆ

2.5 ਕਾਵਿ ਸਰੋਕਾਰ

2.6 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਤੀਜਾ (ਪਰਵਾਸੀ ਕਹਾਣੀ)

3. ਗੁਰਮੀਤ ਪਨਾਗ, ***ਮੁਰਗਾਬੀਆਂ***, ਐਸਥੈਟਿਕ ਪਬਲੀਕੇਸ਼ਨਜ਼ ਲੁਧਿਆਣਾ, 2018

3.1 ਕਹਾਣੀ : ਪਰਿਭਾਸ਼ਾ, ਸਰੂਪ ਅਤੇ ਲੱਛਣ

3.2 ਵਿਸ਼ੇਗਤ ਸਰੋਕਾਰ

3.3 ਕਲਾਤਮਕ ਜੁਗਤਾਂ

3.4 ਪਰਵਾਸੀ ਚੇਤਨਾ

3.5 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਅਕਾਲ ਅੰਮ੍ਰਿਤ ਕੌਰ, **ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਗਲਪ : ਨਵੇਂ ਪਾਸਾਰ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ
2. ਸ. ਪ. ਸਿੰਘ, **ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ,** ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ
3. ਹਰਚੰਦ ਸਿੰਘ ਬੇਦੀ, **ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਮਸਲੇ**, ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ, 2004
4. ਜਸਵਿੰਦਰ ਸਿੰਘ ਅਤੇ ਸੁਰਜੀਤ ਸਿੰਘ, **ਪੰਜਾਬੀ ਡਾਇਸਪੋਰਾ, ਸਾਹਿਤ ਅਤੇ ਸਭਿਆਚਾਰ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2012
5. ਜੁਗਿੰਦਰ ਸਿੰਘ ਨਹਿਰੂ, **ਪੰਜਾਬੀ ਕੈਨੇਡੀਅਨ ਸਾਹਿਤ,** ਲੋਕਾਇਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 1998
6. ਦੇਵਿੰਦਰ ਚੰਦਨ, **ਬਰਤਾਨਵੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਮਸਲੇ,** ਸੂਰਜ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ
7. ਪ੍ਰੇਮ ਪ੍ਰਕਾਸ਼ ਸਿੰਘ ਧਾਲੀਵਾਲ, **ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ : ਮੁੱਲ ਤੇ ਮੁਲਾਂਕਣ,** ਮਦਾਨ ਪਬਲੀਕੇਸ਼ਨ, ਪਟਿਆਲਾ
8. ਬਲਕਾਰ ਸਿੰਘ, **ਡਾਇਸਪੋਰਾ ਅਤੇ ਪੰਜਾਬੀ ਬਿਰਤਾਂਤ,** ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2005
9. ਰਾਜਿੰਦਰ ਸਿੰਘ ਲਾਂਬਾ, **ਖੋਜ ਪਤ੍ਰਿਕਾ (ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਵਿਸ਼ੇਸ਼ ਅੰਕ) ਅੰਕ 40,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2000
10. ਰਾਜਿੰਦਰ ਪਾਲ ਸਿੰਘ (ਸੰਪਾ.), **ਪੰਜਾਬੀ ਡਾਇਸਪੋਰਾ ਸਾਹਿਤ ਅਤੇ ਸਭਿਆਚਾਰ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ,
11. -ਉਹੀ-, **ਪੰਜਾਬੀ ਡਾਇਸਪੋਰਾ ਅਧਿਐਨ ਅਤੇ ਅਧਿਆਪਨ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲ

Mapping Matrix of Course B-PBI (E)-DSE 601

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (B-PBI (E)-DSE 601) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course B-PBI (E)-DSE 601

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
B-PBI (E)-DSE 601.1	3	2	3	2	3	2	3	3
B-PBI (E)-DSE 601.2	3	3	3	2	3	2	3	3
B-PBI (E)-DSE 601.3	3	3	3	2	3	2	3	3
B-PBI (E)-DSE 601.4	3	3	3	2	3	2	3	3
Average	3	2.75	3	2	3	2	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (B-PBI (E)-DSE 601) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the CourseB-PBI (E)-DSE 601

CO	PSO 1	PSO 2	PSO 3	PSO 4
B-PBI (E)-DSE 601.1	3	3	3	3
B-PBI (E)-DSE 601.1	3	3	3	3
B-PBI (E)-DSE 601.3	3	3	3	3
B-PBI (E)-DSE 601.4	3	3	3	2
Average	3	3	3	2.75

Semester : VI
B-PBI (E)-DSE 602

ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਗਲਪ
(Pakistani Punjabi Galap)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਦਾ ਪਹਿਲਾ ਸੁਆਲ ਨਾਵਲ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਨਾਵਲ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਨਾਵਲਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਦਾ ਪਹਿਲਾ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀਆਂ ਕਹਾਣੀਆਂ ਦੇ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ/ ਵਿਸ਼ੇ/ ਸਮੱਸਿਆ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਹਾਣੀਆਂ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਹਾਣੀਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਦਾ ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸ, ਇਸਦੇ ਝੁਕਾਵਾਂ ਅਤੇ ਪ੍ਰਮੁੱਖ ਸਾਹਿਤਕਾਰਾਂ ਨਾਲ ਪਰਿਚੈ ਕਰਾਉਣਾ ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

B-PBI (E)-DSE 602.1 ਵਿਦਿਆਰਥੀ ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਸਿਧਾਂਤ, ਇਤਿਹਾਸਕ ਪਿੱਠ-ਭੂਮੀ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

B-PBI (E)-DSE 602.2 ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਮੁੱਖ ਸਰੋਕਾਰਾਂ ਨਾਲ ਜਾਣ-ਪਛਾਣ ਹੋਵੇਗੀ।

B-PBI (E)-DSE 602.3 ਪਾਕਿਸਤਾਨੀ ਸਾਹਿਤਕਾਰਾਂ ਦੀਆਂ ਰਚਨਾਵਾਂ ਦੇ ਹਵਾਲੇ ਨਾਲ ਪਾਕਿਸਤਾਨ ਵਿਚਲੇ ਪੰਜਾਬੀ ਜਨ-ਜੀਵਨ, ਸਭਿਆਚਾਰ, ਸੋਚ ਅਤੇ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਸਮਝਣ ਦੀ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।

B-PBI (E)-DSE 602.4 ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਪਾਕਿਸਤਾਨੀ ਅਤੇ ਭਾਰਤੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਤੁਲਨਾਤਮਕ ਅਧਿਐਨ ਦੀ ਰੁਚੀ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ : (ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ)

1. ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ : ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ
1.1 ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਕਵਿਤਾ
1.2 ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਨਾਵਲ
1.3 ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਕਹਾਣੀ
1.4 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਦੂਜਾ (ਪਾਕਿਸਤਾਨੀ ਨਾਵਲ)

2. ਮੁਦੱਸਰ ਬਸ਼ੀਰ, ***ਕੌਣ***, ਸੰਗਮ ਪਬਲੀਕੇਸ਼ਨ ਸਮਾਣਾ, 2018
2.1 ਨਾਵਲ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਤੱਤ ਅਤੇ ਰੂਪਾਕਾਰਕ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ
2.2 ਵਿਸ਼ਾ ਵਸਤੂ
2.3 ਕਲਾਤਮਕ ਜੁਗਤਾਂ
2.4 ਪਾਤਰ ਚਿੱਤਰਣ
2.5 ਕਥਾਨਕ
2.6 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਤੀਜਾ (ਪਾਕਿਸਤਾਨੀ ਕਹਾਣੀ)

3. ਨੈਣ ਸੁਖ (ਮੂਲ ਲੇਖਕ), ***ਆਈ ਪੁਰੇ ਦੀ ਵਾਅ***, ਲਿੱਪੀਆਂਤਰ ਪਰਮਜੀਤ ਸਿੰਘ ਮੀਸ਼ਾ, ਸੱਚਲ ਪ੍ਰਕਾਸ਼ਨ , ਅੰਮ੍ਰਿਤਸਰ, 2019
3.1 ਕਹਾਣੀ : ਪਰਿਭਾਸ਼ਾ, ਸਰੂਪ ਅਤੇ ਲੱਛਣ
3.2 ਵਿਸ਼ੇਗਤ ਅਧਿਐਨ
3.3 ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ
3.4 ਪਾਤਰ ਵਿਧਾਨ
3.5 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਅਜਮੇਰ ਸਿੰਘ (ਸੰਪਾ.) **ਖੋਜ ਪਤ੍ਰਿਕਾ (ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਵਿਸ਼ੇਸ਼ ਅੰਕ) ਅੰਕ 37** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2000
2. ਇੰਦਰਪਾਲ ਕੌਰ (ਸੰਪਾ.) **ਸ਼ਬਦ ਬੂੰਦ (ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਵਿਸ਼ੇਸ਼ ਅੰਕ)** ਹਰਿਆਣਾ ਪੰਜਾਬੀ ਸਾਹਿਤ ਅਕਾਦਮੀ, ਪੰਚਕੂਲਾ
3. ਸਤਿੰਦਰ ਸਿੰਘ ਨੂਰ ਅਤੇ ਰਵੇਲ ਸਿੰਘ (ਸੰਪਾ.) **ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ** ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 2001
4. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ **ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ : ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ** ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ, 1998
5. ਕਰਨੈਲ ਸਿੰਘ ਥਿੰਦ **ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਸੰਖੇਪ ਜਾਇਜ਼ਾ** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2006
6. ਗੁਰਚਰਨ ਸਿੰਘ ਮਹਿਤਾ **ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ : ਇੱਕ ਪਰਿਚਯ ਇੱਕ ਜਾਇਜ਼ਾ** ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ, 1998
7. ਜਤਿੰਦਰ ਪਾਲ ਸਿੰਘ **ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਗਲਪ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ, 2001

Mapping Matrix of Course B-PBI (E)-DSE 602

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (**B-PBI (E)-DSE 602**) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course B-PBI (E)-DSE 602

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
B-PBI (E)-DSE 602.1	3	2	3	2	3	2	3	3
B-PBI (E)-DSE 602.2	3	3	3	2	3	2	3	3
B-PBI (E)-DSE 602.3	3	3	3	2	3	2	3	3
B-PBI (E)-DSE 602.4	3	3	3	2	3	2	3	3
Average	3	2.75	3	2	3	2	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (**B-PBI (E)-DSE 602**) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course B-PBI (E)-DSE 602

CO	PSO 1	PSO 2	PSO 3	PSO 4
B-PBI (E)-DSE 602.1	3	3	3	3
B-PBI (E)-DSE 602.2	3	3	3	3
B-PBI (E)-DSE 602.3	3	3	3	3
B-PBI (E)-DSE 602.4	3	3	3	2
Average	3	3	3	2.75

Semester : VI

B-PBI (E)-GE 603

ਪੰਜਾਬੀ ਲੰਮੀ ਕਵਿਤਾ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ

(Punjabi Lammi Kavita ate Viharak Punjabi)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਗੁਰਬਾਣੀ, ਗੁਰਮਤਿ ਰੂਪਾਕਾਰ ਆਦਿ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਇੱਕ ਸੁਆਲ ਵਾਰ ਕਾਵਿ ਦੇ ਸਿਧਾਂਤ ਬਾਰੇ/ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਵਾਰ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਕਲਾਤਮਕ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਵਾਰ ਵਿੱਚੋਂ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰ ਦੇ ਹਨ।
5. ਯੂਨਿਟ ਤੀਜਾ ਦੇ ਪੰਜ ਉਪ-ਭਾਗ ਹਨ। ਉਪ-ਭਾਗ ਪਹਿਲਾ ਵਿੱਚ ਸੰਖੇਪ ਰਚਨਾ, ਉਪ-ਭਾਗ ਦੂਜਾ ਵਿੱਚ ਵਿਗਿਆਪਨ ਰਚਨਾ, ਉਪਭਾਗ ਤੀਜਾ ਵਿੱਚ ਬੋਲੀ/ ਭਾਸ਼ਾ, ਉਪਭਾਗ ਚੌਥਾ ਵਿੱਚ ਸ਼ਬਦ ਸ਼ਕਤੀਆਂ ਅਤੇ ਉਪ-ਭਾਗ ਪੰਜਵਾਂ ਵਿੱਚ ਪੰਜਾਬੀ ਸੁਰ ਪ੍ਰਬੰਧ ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਉਪ-ਭਾਗ ਛੇ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਪੰਜਾਬੀ ਲੰਮੀ ਕਵਿਤਾ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਵਿਹਾਰਕ ਪੱਖ ਬਾਰੇ ਸਮਝ ਪੈਦਾ ਕਰਨਾ।
- ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੇ ਅਧਿਐਨ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਪ੍ਰਤੀ ਵਿਸ਼ੇਸ਼ ਸਮਝ ਪੈਦਾ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

B-PBI (E)-GE 603.1 ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਪੰਜਾਬੀ ਲੰਮੀ ਕਵਿਤਾ ਸਬੰਧੀ ਸਿਧਾਂਤਕ ਅਤੇ ਵਿਹਾਰਕ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।

B-PBI (E)-GE 603.2 ਪੰਜਾਬੀ ਪੰਜਾਬੀ ਲੰਮੀ ਕਵਿਤਾ ਦੇ ਇਤਿਹਾਸਕ ਵਿਕਾਸ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।

B-PBI (E)-GE 603.3 ਲੰਮੀ ਕਵਿਤਾ ਦੀ ਵਿਸ਼ੇਸ਼ ਪੜ੍ਹਤ ਦੁਆਰਾ ਪੰਜਾਬੀ ਲੰਮੀ ਕਵਿਤਾ ਦੇ ਵਿਹਾਰਕ ਅਧਿਐਨ ਦੀ ਯੋਗਤਾ ਹਾਸਲ ਹੋਵੇਗੀ।

B-PBI (E)-GE 603.4 ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੀ ਪੜ੍ਹਾਈ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਸੰਰਚਨਾ ਅਤੇ ਵਰਤੋਂ ਵਿਹਾਰ ਬਾਰੇ ਸਮਝ ਅਤੇ ਮੁਹਾਰਤ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ (ਸਿਧਾਂਤਕ ਪੱਖ)

1. ਲੰਮੀ ਕਵਿਤਾ : ਰੂਪਾਕਾਰਕ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

1.1 ਬਿਰਤਾਂਤਕ ਜੁਗਤ

1.2 ਕਾਵਿ ਬਿੰਬ

1.3 ਕਲਾਤਮਕ ਪੱਖ

1.4 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਦੂਜਾ (ਲੰਮੀ ਕਵਿਤਾ)

2. ਹਰਿਭਜਨ ਸਿੰਘ, ***ਰੁੱਖ ਤੇ ਰਿਸ਼ੀ***, ਨਵਯੁਗ ਪਬਲਿਸ਼ਰਜ਼, ਦਿੱਲੀ

2.1 ਕਾਵਿ ਕਲਾ

2.2 ਕਾਵਿ ਰੂਪਾਕਾਰ

2.3 ਵਿਚਾਰਧਾਰਾ

2.4 ਹਿੰਸਾ ਅਹਿੰਸਾ ਵਿੱਚ ਸੰਵਾਦ

2.5 ਕਾਵਿ ਵਿਧੀ

2.6 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਤੀਜਾ (ਵਿਹਾਰਕ ਪੰਜਾਬੀ)

3. ਵਿਹਾਰਕ ਪੰਜਾਬੀ

3.1 ਸੰਖੇਪ ਰਚਨਾ

3.2 ਵਿਗਿਆਪਨ ਰਚਨਾ

3.3 ਬੋਲੀ/ ਭਾਸ਼ਾ : ਪਰਿਭਾਸ਼ਾ, ਕਾਰਜ ਅਤੇ ਭੇਦ

3.4 ਸ਼ਬਦ ਸ਼ਕਤੀਆਂ : ਪਰਿਭਾਸ਼ਾ ਤੇ ਕਿਸਮਾਂ

3.5 ਪੰਜਾਬੀ ਸੁਰ ਪ੍ਰਬੰਧ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਨ, ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ, 2006

2. ਮਹਿੰਦਰ ਕੌਰ ਗਿੱਲ, ਵਿਹਾਰਕ ਪੰਜਾਬੀ, ਮਨਪ੍ਰੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ

Mapping Matrix of Course B-PBI (E)-GE 603

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (B-PBI (E)-GE 603) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course B-PBI (E)-GE 603

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
B-PBI (E)-GE 603.1	3	3	3	2	3	2	3	3
B-PBI (E)-GE 603.2	3	3	3	2	3	2	3	3
B-PBI (E)-GE 603.3	3	3	3	2	3	2	3	3
B-PBI (E)-GE 603.4	3	3	3	2	3	2	3	3
Average	3	3	3	2	3	2	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (B-PBI (E)-GE 603) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the CourseB-PBI (E)-GE 603

CO	PSO 1	PSO 2	PSO 3	PSO 4
B-PBI (E)-GE 603.1	3	3	3	3
B-PBI (E)-GE 603.2	3	3	3	3
B-PBI (E)-GE 603.3	3	3	3	3
B-PBI (E)-GE 603.4	3	3	3	2
Average	3	3	3	2.75

Semester : III/IV/V/VI

B-PBI(E)-SEC-1

ਫ਼ਿਲਮਸਾਜ਼ੀ ਦਾ ਹੁਨਰ : ਅਧਿਐਨ ਅਤੇ ਸਿਖਲਾਈ

(Filmsazi Da Hunar: Adhyan Ate Sikhlai)

ਕ੍ਰੈਡਿਟ : 2

ਸਮਾਂ : 2 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 50

(ਪੇਪਰ : 40, ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 10)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 10 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਪੰਜ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਪੰਜੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਦੋ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ 5 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਫ਼ਿਲਮਸਾਜ਼ੀ ਦੇ ਹੁਨਰ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਦਾਨ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

B-PBI(E)-SEC-1.1	ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਭਾਰਤੀ ਅਤੇ ਪੰਜਾਬੀ ਫ਼ਿਲਮਸਾਜ਼ੀ ਦੇ ਇਤਿਹਾਸ ਅਤੇ ਪ੍ਰਮੁੱਖ ਝੁਕਾਵਾਂ ਦਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ
B-PBI(E)-SEC-1.2	ਵਿਦਿਆਰਥੀ ਫ਼ਿਲਮਸਾਜ਼ੀ, ਕੋਰੀਓਗਰਾਫ਼ੀ, ਸਿਨਮੈਟੋਗਰਾਫ਼ੀ ਅਤੇ ਫ਼ਿਲਮਾਂ ਲਈ ਸੰਵਾਦ ਲੇਖਣ ਦੀ ਗਹਿਨ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਕਰਨਗੇ।
B-PBI(E)-SEC-1.3	ਵਿਦਿਆਰਥੀ ਫ਼ਿਲਮ ਮੁਲਾਂਕਣ, ਫ਼ਿਲਮ ਰਿਵਿਊ ਕਰਨ ਦੀ ਮੁਹਾਰਤ ਹਾਸਲ ਕਰ ਸਕਣਗੇ।
B-PBI(E)-SEC-1.4	ਵਿਦਿਆਰਥੀ ਫ਼ਿਲਮਸਾਜ਼ੀ ਦੇ ਹੁਨਰ ਵਿੱਚ ਵਿਵਹਾਰਕ ਅਤੇ ਪ੍ਰੋਫ਼ੈਸ਼ਨਲ ਤੌਰ 'ਤੇ ਮੁਹਾਰਤ ਹਾਸਲ ਕਰਨਗੇ।

ਯੂਨਿਟ ਪਹਿਲਾ

1 ਭਾਰਤੀ ਅਤੇ ਪੰਜਾਬੀ ਫ਼ਿਲਮਸਾਜ਼ੀ

1.1 ਭਾਰਤੀ ਅਤੇ ਪੰਜਾਬੀ ਫ਼ਿਲਮਸਾਜ਼ੀ : ਆਰੰਭ ਅਤੇ ਵਿਕਾਸ

1.2 ਭਾਰਤੀ ਅਤੇ ਪੰਜਾਬੀ ਫ਼ਿਲਮਸਾਜ਼ੀ : ਪ੍ਰਵਿਰਤੀਆਂ ਅਤੇ ਝੁਕਾਅ

1.3 ਭਾਰਤੀ ਅਤੇ ਪੰਜਾਬੀ ਫ਼ਿਲਮਸਾਜ਼ੀ : ਅੰਤਰ ਪ੍ਰਭਾਵ

ਯੂਨਿਟ ਦੂਜਾ

2.1 ਨਾਚ ਨਿਰਦੇਸ਼ਨ ਜਾਂ ਕੋਰੀਓਗ੍ਰਾਫ਼ੀ : ਪਰਿਭਾਸ਼ਾ, ਕਾਰਜ ਅਤੇ ਮਹੱਤਵ

2.2 ਕੈਮਰਾਮੈਨ ਜਾਂ ਸਿਨਮੈਟੋਗ੍ਰਾਫ਼ਰ : ਪਰਿਭਾਸ਼ਾ, ਕਾਰਜ ਅਤੇ ਮਹੱਤਵ

2.3 ਫ਼ਿਲਮਸਾਜ਼ੀ ਦੀ ਭਾਸ਼ਾ/ ਸ਼ਬਦਾਵਲੀ

2.4 ਨਿਰਦੇਸ਼ਨ ਅਤੇ ਨਿਰਦੇਸ਼ਕ

2.5 ਫ਼ਿਲਮ ਲਈ ਕਹਾਣੀ ਲੇਖਣ

2.6 ਸੰਵਾਦ ਲੇਖਣ

2.7 ਗੀਤ ਸੰਗੀਤ ਦੀ ਚੋਣ ਅਤੇ ਤਿਆਰੀ

2.8 ਅਦਾਕਾਰਾਂ ਦੀ ਚੋਣ ਜਾਂ ਕਾਸਟਿੰਗ, ਹੈਂਡਲਿੰਗ

ਯੂਨਿਟ ਤੀਜਾ

3. ਮੜੀ ਦਾ ਦੀਵਾ (ਫ਼ਿਲਮ, 1989), ਨਿਰਦੇਸ਼ਕ ਸੁਰਿੰਦਰ ਸਿੰਘ, ਪ੍ਰੋਡਿਊਸਰ ਰਵੀ ਮਲਿਕ

3.1 ਫ਼ਿਲਮ ਦਾ ਮੁਲਾਂਕਣ/ ਰਿਵਿਊ

3.2 ਆਧਾਰਤ ਨਾਵਲ (ਮੜੀ ਦਾ ਦੀਵਾ) ਤੋਂ ਫ਼ਿਲਮੀ ਰੂਪਾਂਤਰਣ- ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ

3.3 ਸੰਵਾਦ ਦੀ ਭਾਸ਼ਾ

3.4 ਪਾਤਰਾਂ ਦੀ ਅਦਾਕਾਰੀ ਦਾ ਵਿਸ਼ਲੇਸ਼ਣ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਬਖ਼ਸ਼ਿੰਦਰ, ਫ਼ਿਲਮਸਾਜ਼ੀ, ਕਲਮਿਸਤਾਨ, 2-ਨਿਊ ਦਿਓਲ ਨਗਰ, ਜਲੰਧਰ, 2010
2. Jasbir Kaur (Dr.), **Punjabi samaj Ate Media**, Publication Bureau, punjabi University, patiala, 2014
3. ਬਲਜਿੰਦਰ ਨਸਰਾਲੀ, ਪੰਜਾਬੀ ਸਿਨੇਮਾ ਅਤੇ ਸਾਹਿਤ (ਸਮਕਾਲੀ ਸੰਦਰਭ), ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ

Mapping Matrix of Course B-PBI(E)-SEC-1

Mapping: Mapping is a process of representing the correlation between COs and POs, Cos and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (B-PBI(E)-SEC-1) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course B-PBI(E)-SEC-1

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
B-PBI(E)-SEC-1.1	3	2	3	3	3	3	2	2
B-PBI(E)-SEC-1.2	3	3	3	3	3	3	3	3
B-PBI(E)-SEC-1.3	3	3	3	3	3	3	3	3
B-PBI(E)-SEC-1.4	3	3	3	3	3	3	3	3
Average	**3**	**2.75**	**3**	**3**	**3**	**3**	**2.75**	**2.75**

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (B-PBI(E)-SEC-1) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course B-PBI(E)-SEC-1

CO	PSO 1	PSO 2	PSO 3	PSO 4
B-PBI(E)-SEC-1.1	2	2	3	3
B-PBI(E)-SEC-1.2	2	2	3	3
B-PBI(E)-SEC-1.3	2	2	3	3
B-PBI(E)-SEC-1.4	2	2	3	3
Average	**2.25**	**2.25**	**3**	**3**

Semester : III/IV/V/VI

B-PBI (E)-SEC-2

ਮੀਡੀਆ ਅਤੇ ਜਨ-ਸੰਚਾਰ ਦਾ ਹੁਨਰ : ਅਧਿਐਨ ਅਤੇ ਸਿਖਲਾਈ

(Media Ate Jan-Sanchar Da Hunar : Adhyan Ate Sikhlai)

ਕ੍ਰੈਡਿਟ : 2

ਸਮਾਂ : 2 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 50

(ਪੇਪਰ : 40, ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 10)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 10 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਪੰਜ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਪੰਜੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਦੋ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ 5 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਮੀਡੀਆ ਅਤੇ ਜਨ-ਸੰਚਾਰ ਦੇ ਹੁਨਰ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਦਾਨ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

- B-PBI (E)-SEC-2.1 ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਜਨ-ਸੰਚਾਰ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਹਿਲੂਆਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
- B-PBI (E)-SEC-2.2 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਜਨ-ਸੰਚਾਰ ਦੇ ਪ੍ਰਿੰਟ ਅਤੇ ਇਲੈਕਟ੍ਰੋਨਿਕ ਮੀਡੀਆ ਦੇ ਹੁਨਰ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।
- B-PBI (E)-SEC-2.3 ਵਿਦਿਆਰਥੀ ਮੀਡੀਆ ਅਤੇ ਜਨ-ਸੰਚਾਰ ਦੇ ਹੁਨਰ ਵਿੱਚ ਵਿਵਹਾਰਕ ਅਤੇ ਪ੍ਰੋਫ਼ੈਸ਼ਨਲ ਤੌਰ 'ਤੇ ਮੁਹਾਰਤ ਹਾਸਲ ਕਰਨਗੇ।
- B-PBI (E)-SEC-2.4 ਵਿਦਿਆਰਥੀਆਂ ਪੰਜਾਬੀ ਰੇਡੀਓ, ਟੈਲੀਵਿਜ਼ਨ ਅਤੇ ਐਂਕਰਿੰਗ ਦੇ ਕਿੱਤੇ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਕਰ ਸਕਣਗੇ।

ਯੂਨਿਟ ਪਹਿਲਾ

1.1 ਮੀਡੀਆ : ਅਰਥ, ਪਰਿਭਾਸ਼ਾ, ਤੱਤ, ਸਰੂਪ ਤੇ ਸੰਕਲਪ

1.2 ਮੀਡੀਆ ਨਾਲ ਸਬੰਧਤ ਮਹੱਤਵਪੂਰਨ ਮਦਾਂ (Termnology) / ਸੰਕਲਪ

1.3 ਮੀਡੀਆ : ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ

1.4 ਪ੍ਰਿੰਟ ਤੇ ਇਲੈਕਟ੍ਰਾਨਿਕ ਮੀਡੀਆ : ਤਕਨੀਕੀ ਵਿਕਾਸ

1.5 ਮੀਡੀਆ ਅਤੇ ਸੰਚਾਰ ਦਾ ਸਬੰਧ

ਯੂਨਿਟ ਦੂਜਾ

2.1 ਜਨ-ਸੰਚਾਰ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

2.2 ਜਨ ਸੰਚਾਰ ਦੇ ਮਾਧਿਅਮ

2.3 ਜਨ-ਸੰਚਾਰ ਦਾ ਕਾਰਜ ਅਤੇ ਮਹੱਤਵ

2.4 ਜਨ-ਸੰਚਾਰ ਦੀਆਂ ਕਿਸਮਾਂ

2.5 ਨਵੇਂ ਜਨ-ਸੰਚਾਰ ਮਾਧਿਅਮ

ਯੂਨਿਟ ਤੀਜਾ

3. ਮੀਡੀਆ ਅਤੇ ਜਨ-ਸੰਚਾਰ : ਵਿਹਾਰਕ ਪੱਖ

3.1 ਸੰਚਾਰ ਪ੍ਰਕ੍ਰਿਆ ਦੇ ਜ਼ਰੂਰੀ ਤੱਤਾਂ ਨੂੰ ਜਾਣਨਾ

3.2 ਰੇਡੀਉ ਜਾਂ ਟੈਲੀਵਿਜ਼ਨ ਲਈ ਇੰਟਰਵਿਊ ਤਿਆਰ ਕਰਨ ਦੀ ਵਿਧੀ ਨੂੰ ਸਿੱਖਣਾ

3.3 ਰੇਡਿਉ ਜਾਂ ਟੈਲੀਵਿਜ਼ਨ ਲਈ ਵਿਗਿਆਪਨ ਤਿਆਰ ਕਰਨ ਦੇ ਹੁਨਰ ਨੂੰ ਸਿੱਖਣਾ

3.4 ਐਂਕਰਿੰਗ ਦੇ ਹੁਨਰ ਨੂੰ ਸਿੱਖਣਾ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਹਰਜਿੰਦਰ ਸਿੰਘ ਵਾਲੀਆ ਅਤੇ ਭੁਪਿੰਦਰ ਸਿੰਘ ਬੱਤਰਾ, ਸੰਚਾਰ, ਮਦਾਨ ਪਬਲੀਕੇਸ਼ਨਜ਼, ਪਟਿਆਲਾ, 2005
2. ਜਗਜੀਤ ਕੌਰ ਅਤੇ ਮਨਜੀਤ ਸਿੰਘ (ਸੰਪਾ.), ਸਿਰਜਣਾਤਮਕ ਲੇਖਣ ਅਤੇ ਜਨ-ਸੰਚਾਰ ਮਾਧਿਅਮ, ਮਨਪ੍ਰੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਨਵੀਂ ਦਿੱਲੀ, 2013
3. ਨਵਨਿੰਦਰਾ ਬਹਿਲ (ਸੰਪਾ.), ਰੰਗਮੰਚ ਅਤੇ ਟੈਲੀਵਿਜ਼ਨ ਨਾਟਕ, ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ
4. ਜਸਬੀਰ ਕੌਰ (ਸੰਪਾ.), ਪੰਜਾਬੀ ਸਮਾਜ ਅਤੇ ਮੀਡੀਆ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ

Mapping Matrix of Course B-PBI (E)-SEC-2

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (B-PBI (E)-SEC-2) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course B-PBI (E)-SEC-2

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
B-PBI (E)-SEC-2.1	3	3	3	2	3	2	3	3
B-PBI (E)-SEC-2.2	3	3	3	2	3	2	3	3
B-PBI (E)-SEC-2.3	3	3	3	2	3	2	3	3
B-PBI (E)-SEC-2.4	3	3	3	2	3	2	3	3
Average	3	3	3	2	3	2	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (B-PBI (E)-SEC-2) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the CourseB-PBI (E)-SEC-2

CO	PSO 1	PSO 2	PSO 3	PSO 4
B-PBI (E)-SEC-2.1	3	3	3	3
B-PBI (E)-SEC-2.2	3	3	3	3
B-PBI (E)-SEC-2.3	3	3	3	3
B-PBI (E)-SEC-2.4	3	3	3	2
Average	3	3	3	2.75

Semester : III/IV/V/VI

B-PBI (E)-SEC-3

ਸਿਰਜਣਾਤਮਕ ਲੇਖਣ ਦਾ ਹੁਨਰ : ਅਧਿਐਨ ਅਤੇ ਸਿਖਲਾਈ

(Creative Writing : Study and learning Skill)

ਕ੍ਰੈਡਿਟ : 2

ਸਮਾਂ : 2 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 50

(ਪੇਪਰ : 40, ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 10)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 10 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਪੰਜ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਪੰਜੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਦੋ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ 5 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਸਿਰਜਣਾਤਮਕ ਲੇਖਣ ਦੇ ਹੁਨਰ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਦਾਨ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

B-PBI (E)-SEC-3.1 ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਜਨ-ਸੰਚਾਰ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਹਿਲੂਆਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

B-PBI (E)-SEC-3.2 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਜਨ-ਸੰਚਾਰ ਦੇ ਪ੍ਰਿੰਟ ਅਤੇ ਇਲੈਕਟ੍ਰੋਨਿਕ ਮੀਡੀਆ ਦੇ ਹੁਨਰ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।

B-PBI (E)-SEC-3.3 ਵਿਦਿਆਰਥੀ ਸਿਰਜਣਾਤਮਕ ਲੇਖਣ ਦੇ ਹੁਨਰ ਵਿੱਚ ਵਿਵਹਾਰਕ ਅਤੇ ਪ੍ਰੋਫ਼ੈਸ਼ਨਲ ਤੌਰ 'ਤੇ ਮੁਹਾਰਤ ਹਾਸਲ ਕਰਨਗੇ।

B-PBI (E)-SEC-3.4 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਖਬਰਾਂ ਦੇ ਸੰਪਾਦਨ, ਫ਼ੀਚਰ ਲੇਖਣ, ਇੰਟਰਵਿਊ ਕਲਾ ਅਤੇ ਵਿਗਿਆਪਨ ਲੇਖਣ ਦਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਸਿਰਜਣਾਤਮਕ ਲੇਖਣ

1.1 ਸਿਰਜਣਾ ਲਈ ਕੁਝ ਜ਼ਰੂਰੀ ਨੁਕਤੇ

1.2 ਸਾਹਿਤ ਅਤੇ ਸੰਚਾਰ

1.3 ਜਨ-ਸੰਚਾਰ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

1.4 ਸਿਰਜਣਾਤਮਕਤਾ ਅਤੇ ਮੀਡੀਆ ਲੇਖਣ- ਕਵਿਤਾ, ਕਹਾਣੀ ਅਤੇ ਨਾਟਕ

1.5 ਸਿਰਜਣਾਤਮਕ ਲੇਖਣ ਦਾ ਉਦੇਸ਼ ਅਤੇ ਮਹੱਤਵ

ਯੂਨਿਟ ਦੂਜਾ

2. ਜਨ-ਸੰਚਾਰ ਲਈ ਸਿਰਜਣਾ : ਪ੍ਰਿੰਟ ਮੀਡੀਆ

2.1 ਖਬਰਾਂ ਦਾ ਸੰਪਾਦਨ

2.2 ਫ਼ੀਚਰ ਲੇਖਣ

2.3 ਇੰਟਰਵਿਊ ਲੇਖਣ

2.4 ਵਿਗਿਆਪਨ ਲੇਖਣ

2.5 ਬੱਚਿਆਂ ਲਈ ਲੇਖਣ

ਯੂਨਿਟ ਤੀਜਾ

3. ਜਨ-ਸੰਚਾਰ ਲਈ ਸਿਰਜਣਾ : ਇਲੈਕਟ੍ਰੋਨਿਕ ਮੀਡੀਆ

3.1 ਖ਼ਬਰਾਂ ਲੇਖਣ ਦੀ ਕਲਾ ਸਿੱਖਣਾ

3.2 ਐਂਕਰਿੰਗ ਦੀ ਕਲਾ ਸਿੱਖਣਾ

3.3 ਇੰਟਰਨੈੱਟ ਦਾ ਪ੍ਰਯੋਗ ਸਿੱਖਣਾ

3.4 ਇੰਟਰਵਿਊ ਕਰਨ ਦੀ ਕਲਾ ਸਿੱਖਣਾ

3.5 ਵਿਗਿਆਪਨ ਤਿਆਰ ਕਰਨਾ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਜਗਜੀਤ ਕੌਰ ਅਤੇ ਮਨਜੀਤ ਸਿੰਘ (ਸੰਪਾ.), ਸਿਰਜਣਾਤਮਕ ਲੇਖਣ ਅਤੇ ਜਨ-ਸੰਚਾਰ ਮਾਧਿਅਮ, ਮਨਪ੍ਰੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ
2. ਰਵੇਲ ਸਿੰਘ, ਮੀਡੀਆ ਵਿਹਾਰਕ ਅਧਿਐਨ, ਗਰੇਸੀਅਸ ਬੁੱਕਸ, ਪਟਿਆਲਾ
3. ਪ੍ਰਿਥਵੀ ਰਾਜ ਥਾਪਰ, ਸੰਚਾਰ ਤਕਨੀਕ ਅਤੇ ਮਲਟੀਮੀਡੀਆ, ਮਨਪ੍ਰੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ

Mapping Matrix of Course B-PBI (E)-SEC-3

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (B-PBI (E)-SEC-3) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course B-PBI (E)-SEC-3

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
B-PBI (E)-SEC-3.1	3	3	3	2	3	2	3	3
B-PBI (E)-SEC-3.2	3	3	3	2	3	2	3	3
B-PBI (E)-SEC-3.3	3	3	3	2	3	2	3	3
B-PBI (E)-SEC-3.4	3	2	3	3	3	2	3	3
Average	**3**	**2.75**	**3**	**2.25**	**3**	**2**	**3**	**3**

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (B-PBI (E)-SEC-3) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the CourseB-PBI (E)-SEC-3

CO	PSO 1	PSO 2	PSO 3	PSO 4
B-PBI (E)-SEC-3.1	3	3	3	3
B-PBI (E)-SEC-3.2	3	3	3	3
B-PBI (E)-SEC-3.3	3	3	3	3
B-PBI (E)-SEC-3.4	3	2	3	2
Average	**3**	**2.75**	**3**	**2.75**

Semester : III/IV/V/VI

B-PBI (E)-SEC-4

ਨਾਟਕ ਅਤੇ ਰੰਗਮੰਚ ਦਾ ਹੁਨਰ : ਅਧਿਐਨ ਅਤੇ ਸਿਖਲਾਈ

(Natak Ate Rangmanch Da Hunar : Adhyan Ate Sikhlai)

ਕ੍ਰੈਡਿਟ : 2

ਸਮਾਂ : 2 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 50

(ਪੇਪਰ : 40, ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 10)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 10 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਪੰਜ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਪੰਜੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਦੋ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ 5 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਨਾਟਕ ਅਤੇ ਰੰਗਮੰਚ ਦੇ ਹੁਨਰ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਦਾਨ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

B-PBI (E)-SEC-4.1 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਨਾਟਕ ਪੜ੍ਹਨ, ਨਾਟਕ ਖੇਡਣ ਅਤੇ ਇਸਦੀ ਪੇਸ਼ਕਾਰੀ ਲਈ ਸਹਾਇਕ ਵਿਉਂਤਕਾਰਾਂ ਬਾਰੇ ਵਿਸਤ੍ਰਿਤ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।

B-PBI (E)-SEC-4.2 ਵਿਦਿਆਰਥੀ ਨਾਟਕ ਲਈ ਸੰਵਾਦ ਲੇਖਣ ਦੀ ਗਹਿਨ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਕਰਨਗੇ।

B-PBI (E)-SEC-4.3 ਵਿਦਿਆਰਥੀ ਨਾਟਕ ਦੀ ਮੰਚੀ ਮੁਹਾਰਤ ਹਾਸਲ ਕਰ ਸਕਣਗੇ।

B-PBI (E)-SEC-4.4 ਵਿਦਿਆਰਥੀ ਨਾਟਕ ਅਤੇ ਰੰਗਮੰਚ ਦੇ ਹੁਨਰ ਵਿੱਚ ਵਿਵਹਾਰਕ ਅਤੇ ਪ੍ਰੋਫ਼ੈਸ਼ਨਲ ਤੌਰ 'ਤੇ ਮੁਹਾਰਤ ਹਾਸਲ ਕਰਨਗੇ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਨਾਟਕ ਅਤੇ ਰੰਗਮੰਚ : ਸਿਧਾਂਤਕ ਪੱਖ

1.1 ਨਾਟਕ ਅਤੇ ਰੰਗਮੰਚ ਦਾ ਸਬੰਧ

1.2 ਨਾਟ-ਵਿਧਾ ਦੀਆਂ ਰੰਗਮੰਚੀ ਸਮੱਸਿਆਵਾਂ

1.3 ਪਾਤਰ ਉਸਾਰੀ, ਅਦਾਕਾਰੀ ਹੁਨਰ ਅਤੇ ਰੀਹਰਸਲਾਂ

1.4 ਨਾਟ ਸਿਰਜਣ ਪ੍ਰਕ੍ਰਿਆ ਨੂੰ ਸਮਝਣਾ

ਯੂਨਿਟ ਦੂਜਾ

2. ਨਾਟਕ ਵਿਧਾ ਦੇ ਸਹਾਇਕ ਵਿਉਂਤਕਾਰ

2.1 ਨਾਟਕ ਪੇਸ਼ਕਾਰੀ ਵਿੱਚ ਸੰਗੀਤ ਦਾ ਰੋਲ ਅਤੇ ਮਹੱਤਵ

2.2 ਨਾਟਕ ਪੇਸ਼ਕਾਰੀ ਵਿੱਚ ਆਵਾਜ਼ ਵੇਰੀਏਸ਼ਨਜ਼ ਦਾ ਰੋਲ ਅਤੇ ਮਹੱਤਵ

2.3 ਨਾਟਕ ਪੇਸ਼ਕਾਰੀ ਵਿੱਚ ਅਦਾਵਾਂ ਦਾ ਰੋਲ ਅਤੇ ਮਹੱਤਵ

2.4 ਨਾਟਕ ਪੇਸ਼ਕਾਰੀ ਵਿੱਚ ਵੇਸ-ਭੂਸ਼ਾ ਦਾ ਮਹੱਤਵ

2.5 ਨਾਟਕ ਪੇਸ਼ਕਾਰੀ ਵਿੱਚ ਰੋਸ਼ਨੀ ਅਤੇ ਮੰਚ ਸੱਜਾ ਦਾ ਰੋਲ ਅਤੇ ਮਹੱਤਵ

ਯੂਨਿਟ ਤੀਜਾ

3. ਮੰਚੀ ਅਭਿਆਸ

3.1 ਕਹਾਣੀ ਅਤੇ ਹੋਰ ਸਾਹਿਤਕ ਪਾਠਾਂ ਦਾ ਨਾਟਕੀ ਰੂਪਾਂਤਰਣ

3.2 ਲੇਖਣ ਹੁਨਰ-ਸਕਰਿਪਟ ਅਤੇ ਸੰਵਾਦ ਤਿਆਰ ਕਰਨਾ

3.3 ਅਭਿਨੈ ਹੁਨਰ ਨੂੰ ਸਿੱਖਣਾ

3.4 ਵੇਸ-ਭੂਸ਼ਾ, ਮੇਕਅਪ ਕਰਨ ਦੇ ਹੁਨਰ ਨੂੰ ਸਿੱਖਣਾ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਪਾਲੀ ਭੁਪਿੰਦਰ, ਨਾਟਕ ਅਤੇ ਨਾਟ ਚਿੰਤਨ, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ
2. ਕਿਰਪਾਲ ਕਜ਼ਾਕ, ਰੰਗਮੰਚ ਚਿੰਤਨ, ਗਰੇਸੀਅਸ ਬੁੱਕਸ, ਪਟਿਆਲਾ
3. ਨਵਨਿੰਦਰਾ ਬਹਿਲ, ਰੰਗਮੰਚ ਅਤੇ ਟੈਲੀਵਿਜ਼ਨ ਨਾਟਕ, ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ
4. ਜਸਵਿੰਦਰ ਕੌਰ ਮਾਂਗਟ, ਰੰਗਮੰਚ ਦੇ ਬੁਨਿਆਦੀ ਨਿਯਮ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
5. ਸਤੀਸ਼ ਕੁਮਾਰ ਵਰਮਾ, ਪੰਜਾਬੀ ਰੰਗਮੰਚ ਦੀ ਭੂਮਿਕਾ, ਬਿਸ਼ਨ ਚੰਦ ਐਂਡ ਸੰਜ਼, ਦਿੱਲੀ

Mapping Matrix of Course B-PBI (E)-SEC-4

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (B-PBI (E)-SEC-4) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course B-PBI (E)-SEC-4

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
B-PBI (E)-SEC-4.1	3	3	3	2	3	2	3	3
B-PBI (E)-SEC-4.2	3	3	3	2	3	2	3	3
B-PBI (E)-SEC-4.3	3	3	3	2	3	2	3	3
B-PBI (E)-SEC-4.4	3	3	3	2	3	2	3	3
Average	3	3	3	2	3	2	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (B-PBI (E)-SEC-4) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the CourseB-PBI (E)-SEC -4

CO	PSO 1	PSO 2	PSO 3	PSO 4
B-PBI (E)-SEC-4.1	3	3	3	3
B-PBI (E)-SEC-4.2	3	3	3	3
B-PBI (E)-SEC-4.3	3	3	3	3
B-PBI (E)-SEC-4.4	3	3	3	2
Average	3	3	3	2.75

DEPARTMENT OF PANJABI
KURUKSHETRA UNIVERSITY, KURUKSHETRA

Scheme of Examination and Syllabi of Certificate Course in Punjabi (Annual System)
(Under Choice Based Credit System with LOCF)
(Effective from the Academic Session: 2020-21)

1. This is the one year elementary course of Panjabi language.
2. The classes of this course held in the evening.
3. This course comprises three tier learning system, one elementary i.e. knowledge of alphabets, script writing and making short sentences from the beginning.
4. Through this course candidates can read, write and speak Panjabi very well.
5. They can use this language in Radio, Television and newspaper as a job oriented through the jobs of translator and as interpreter.
6. Through this elementary course candidates can speak Panjabi like any other language and its correct pronunciation to the extent of daily practical needs.
7. This course also helps and fulfill the need of research scholars in the subjects of Medieval Indian and Panjab History, Panjabi Literature , Fine Arts, Ancient Indian and Panjab history, Music, Indian and Panjabi theatre and visual arts, Law, Police administration etc.
8. This course is very useful and important for the Panjabi lovers those who are interested in Panjabi poetry, Panjabi songs and Panjabi Gazals or those who themselves do poetry in Punjabi, Hindi or any other Modern Indian languages.
9. Panjabi is most important language for journalism, translation, anchoring, advertising and many other areas of employment.
10. This course improve your personality and provide you recognisation through correct and proper use of Panjabi words and idioms.

Outlines of test, syllabi and course of reading for Certificate Course in Panjabi for the w.e.f. session2020-2021 is as follows:

Syllabus for Certificate Course in Panjabi

Objective:

This Course is meant for foreigners and those Indians who wish to acquire reading and speaking proficiency in Punjabi.

1. Every candidate seeking admission to the one-year Certificate Course in Panjabi must have passed the Senior School Certificate Examination of any recognized board from India or possesses such qualifications, if any, as may be prescribed by regulations.
2. The Examination for the Certificate Course shall be written and Oral according to the following scheme.

The total marks for this course is 250 distributed as follows:

(i) There will be one written paper of 80 marks each of 3 hours duration.
(ii) There will be internal assessment of 20 marks for this paper based on the following criteria:

(a) Two handwritten Assignments (1st Assignment after one month & 2nd Assignment after two months)
(b) One Class Test (One period duration)
(c) Attendance
Marks for Attendance will be given as under:

(1) 91% onwards: 5 marks
(2) 81% to 90% : 4 marks
(3) 75% to 80% : 3 marks
(4) 70% to 75% : 2 marks*
(5) 65% to 70% : 1 mark*

*for students engaged in co-curricular activities of the colleges only/authenticated medical grounds duly approved by the concerned Principal.

(iii) There will be one viva-Voce examination of 100 marks.
(iv)There will be one written paper out of Hindi Open Elective or Personality Development (Open Elective) examination of 50 marks each of 2 hours duration.There will be internal assessment of 10 marks for this paper.

PANJABI DEPARTMENT
FACULTY OF ARTS & LANGUAGES
KURUKSHETRA UNIVERSITY, KURUKSHETRA

Scheme of One Year Certificate Course in Panjabi w.e.f. Session 2020-21 under Choice Based Credit System (CBCS with LOCF)

Paper No.	Name of the Subject	No. of Credits	Teaching Scheme (Hrs./Week)	Examination Scheme (Marks)				
				Theory Exam.	Internal Assessment	Total	Duration	Pass Marks
CCP-101	Functional Panjabi & Translation	04	04	80	20	100	3 Hrs	28
CCP-102	Viva-Voce	04	04	100	-	100	-	-
CCP (OE)*	Punjabi Bhasha Ate Vyakaran : Mudhli Jaan Pachhan	02	02	40	10	50	2 Hrs	14
CCP-103**	Open Elective (Hindi Bhasha Aur Vyakaran) **OR** Personality Development (Open Elective)	02	02	40	10	50	2 Hrs	-
Total Credit /Marks		**10**	**10**	**-**	**-**	**250**		

(i) 80 Marks for External Examination and 20 Marks for Internal Assessment.
(ii) In Open Elective Paper **:** 40 Marks for External Examination and 10 Marks for Internal Assessment.
(iii) 100 Marks for Viva-Voce.

* CCP (OE) paper is Open Elective Paper for students who are doing any Certificate/ Diploma Course (Except Certificate Course in Panjabi) under Dean, faculty of Arts and Languages.
** Students who are doing Certificate Course in Panjabi will have to choose one course from CCP-103 as Open Elective subject.

(ਸਰਟੀਫਿਕੇਟ ਕੋਰਸ ਇਨ ਪੰਜਾਬੀ)

Paper: CCP-101

Functional Panjabi & Translation

ਪੇਪਰ ਪਹਿਲਾ : CCP-101

ਕਾਰਜਾਤਮਕ ਪੰਜਾਬੀ ਅਤੇ ਅਨੁਵਾਦ

ਕ੍ਰੈਡਿਟ : 4
ਕੁੱਲ ਅੰਕ : 100
(ਪੇਪਰ : 80, ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 20)
ਸਮਾਂ : 3 ਘੰਟੇ

ਨੋਟ : ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਉੱਤੇ ਲਿਖਿਆ ਜਾਵੇਗਾ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੋਵੇਗਾ। ਵਿਦਿਆਰਥੀ ਨੇ ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਇੱਕ ਸੁਆਲ ਕਰਨਾ ਹੈ। ਕੁੱਲ ਪੰਜ ਸੁਆਲ ਕਰਨੇ ਹਨ।
2. ਹਰ ਪ੍ਰਸ਼ਨ 16 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਪੇਪਰ ਸੈੱਟਰ ਲਈ ਹਿਦਾਇਤਾਂ :

1. ਪੇਪਰ ਸੈੱਟਰ ਪ੍ਰਸ਼ਨਪੱਤਰ ਵਿੱਚ ਕੁੱਲ ਨੌਂ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇਗਾ।
2. ਪ੍ਰਸ਼ਨ ਨੰਬਰ ਇੱਕ ਵਿੱਚ ਚਾਰ ਛੋਟੇ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ ਜੋ ਕਿ ਸਲੇਬਸ ਵਿੱਚ ਦਿੱਤੇ ਟਾਪਿਕਾਂ ਵਿੱਚੋਂ ਹੋਣਗੇ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ।
3. ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਮੁੱਢਲਾ ਗਿਆਨ ਦੇਣਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

- **CCP-101.1** ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਮੁੱਢਲਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ।
- **CCP-101.2** ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਸ਼ਬਦ ਰਚਨਾ, ਅੱਖਰ ਬੋਧ, ਵਾਕ ਰਚਨਾ ਅਤੇ ਪੰਜਾਬੀ ਅਰਥ ਵਿਗਿਆਨ ਦੀ ਮੁੱਢਲੀ ਜਾਣਕਾਰੀ ਦੇਣਾ।
- **CCP-101.3** ਵਿਦਿਆਰਥੀਆਂ ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ ਅਤੇ ਪੰਜਾਬੀ ਤੋਂ ਅੰਗਰੇਜ਼ੀ ਵਿੱਚ ਅਨੁਵਾਦ ਕਰਨ ਦੀ ਮੁੱਢਲੀ ਮੁਹਾਰਤ ਹਾਸਲ ਕਰਨਗੇ।
- **CCP-101.4** ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਿੱਚ ਪੱਤਰ ਅਤੇ ਲੇਖ ਰਚਨਾ ਦੀ ਮੁੱਢਲੀ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ

ਧੁਨੀ/ ਅੱਖਰ ਬੋਧ

ਅੱਖਰਾਂ/ ਵਰਣਾਂ ਦੀ ਪਛਾਣ, ਅੱਖਰ ਉਚਾਰਣ, ਲਗਾਂ ਮਾਤਰਾਵਾਂ, ਲਗਾਖਰ, ਸਵਰ-ਵਿਅੰਜਨ, ਸ਼ਬਦ ਜੋੜ ਨਿਯਮ ਅਤੇ ਸ਼ਬਦ ਜੋੜ, ਮੁਹਾਵਰੇ, ਅਖਾਣ ਆਦਿ

ਯੂਨਿਟ ਦੂਸਰਾ

ਸ਼ਬਦ ਬੋਧ ਤੇ ਵਿਆਕਰਣਕ ਸ਼੍ਰੇਣੀਆਂ

ਸ਼ਬਦ ਕੀ ਹੈ ? ਸ਼ਬਦ ਬਣਤਰ, ਸ਼ਬਦ ਰਚਨਾ (ਅਗੇਤਰ ਤੇ ਪਿਛੇਤਰ)

ਵਿਆਕਰਣਕ ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ-ਨਾਂਵ, ਪੜਨਾਂਵ, ਵਿਸ਼ੇਸ਼ਣ, ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ, ਸਬੰਧਕ, ਯੋਜਕ, ਵਿਸਮਿਕ ਅਤੇ ਪਾਰਟੀਕਲਜ਼ (ਨਿਪਾਤ) ਦੀ ਸੰਖੇਪ ਜਾਣਕਾਰੀ

ਯੂਨਿਟ ਤੀਸਰਾ

ਵਾਕ ਬੋਧ ਅਤੇ ਅਰਥ ਬੋਧ

ਵਾਕ ਕੀ ਹੈ? ਵਾਕ ਰਚਨਾ, ਵਾਕ ਵੰਡ

ਅਰਥ ਕੀ ਹੈ? ਸਮਾਨਾਰਥਕ ਸ਼ਬਦ, ਬਹੁਅਰਥਕ ਸ਼ਬਦ, ਵਿਪਰੀਤਾਰਥਕ ਸ਼ਬਦ, ਬਹੁਤੇ ਸ਼ਬਦਾਂ ਦੀ ਥਾਂ ਇੱਕ ਸ਼ਬਦ

ਯੂਨਿਟ ਚੌਥਾ

ਅਨੁਵਾਦ ਅਤੇ ਪੱਤਰ ਲੇਖਣ

ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ ਅਤੇ ਪੰਜਾਬੀ ਤੋਂ ਅੰਗਰੇਜ਼ੀ ਜਾਂ ਹਿੰਦੀ ਵਿੱਚ ਅਨੁਵਾਦ

ਪੱਤਰ ਲੇਖਣ ਅਤੇ ਪਦ/ ਪੈਰ੍ਹਾ ਰਚਨਾ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਸ. ਸ. ਖਹਿਰਾ, **ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਵਿਆਕਰਣ ਅਤੇ ਬਣਤਰ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2011
2. ਹਰਕੀਰਤ ਸਿੰਘ, **ਪੰਜਾਬੀ ਸ਼ਬਦ ਰੂਪ ਅਤੇ ਸ਼ਬਦ ਜੋੜ ਕੋਸ਼,**ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1988
3. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ, **ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਣ,** ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ, ਪਟਿਆਲਾ, 2006
4. **ਅਜੋਕੀ ਪੰਜਾਬੀ ਦਾ ਵਿਆਕਰਣ ਅਤੇ ਲੇਖ ਰਚਨਾ**, ਪੰਜਾਬ ਸਕੂਲ ਸਿੱਖਿਆ ਬੋਰਡ, ਮੋਹਾਲੀ, 2012
5. Gurinder Singh Mann, **An Introduction to Punjabi,** Punjabi University, Patiala.
6. ਡਾ. ਸਤਨਾਮ ਸਿੰਘ ਸੰਧੂ, **ਆਏਂ ਪੰਜਾਬੀ ਸੀਖੇਂ**, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
7. Dr. Hardev Singh Bahri, **Teach Yourself Panjabi,** Publication Buraeu, Punjabi University, Patiala.
8. Henry A. Gleason, JR., Harjeet Singh Gill, **A Start In Punjabi**, Publication Buraeu, Punjabi University, Patiala.
9. Ujjal Singh Bahri, Parmjit Singh Walia, **Introductory Punjabi**, Publication Buraeu, Punjabi University, Patiala.
10. Pinderjeet K. Gill, **Conversational Punjabi (ਪੰਜਾਬੀ ਵਿੱਚ ਗੱਲ-ਬਾਤ)**, Unistar Books Pvt. Ltd, Chandigarh

Paper-II (CCP-102)
Viva-voce
ਪੇਪਰ ਦੂਸਰਾ (CCP-102)
ਮੌਖਿਕ ਪ੍ਰੀਖਿਆ

ਕ੍ਰੈਡਿਟ : 4

ਕੁੱਲ ਅੰਕ : 100

ਮੌਖਿਕ ਪ੍ਰੀਖਿਆ ਲਈ ਅੰਕਾਂ ਦੀ ਵੰਡ (Distribution of numbers for Viva-Voce examination)

ਪੜ੍ਹਨ ਹੁਨਰ ਦਾ ਮੁਲਾਂਕਣ (Evaluation of Reading Skill) – 20 ਅੰਕ

ਲਿਖਣ ਹੁਨਰ ਦਾ ਮੁਲਾਂਕਣ (Evaluation of Writing Skill) – 20 ਅੰਕ

ਪੰਜਾਬੀ ਵਿੱਚ ਗੱਲਬਾਤ ਕਰਨ ਦੇ ਹੁਨਰ ਦਾ ਮੁਲਾਂਕਣ (Evaluation of Conversation Skill in Panjabi)–20 ਅੰਕ

ਉਚਾਰਣ ਦੇ ਹੁਨਰ ਦਾ ਮੁਲਾਂਕਣ (Evaluation Of Pronunciation) – 20ਅੰਕ

ਪੰਜਾਬੀ ਵਿੱਚ ਵਸਤੂਪਰਕ ਪ੍ਰਸ਼ਨ ਉੱਤਰ(Objective type question Answers in Panjabi) – 20 ਅੰਕ

(The students will be examined by external/Internal (In unusual Conditions) examiner. The students are expected to read and write simple text and express themselves in simple Panjabi on general questions).

Note: The minimum marks to pass the examination shall be as under:

a) 35% marks in each paper i.e. paper-I, II & III
b) 40% marks in aggregate.

Paper: Open Elective

Panjabi Bhasha Ate Vyakaran: Mudhli Jaan Pachhan

ਪੇਪਰ : ਓਪਨ ਇਲੈਕਟਿਵ

ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਣ : ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ

(ਡੀਨ ਕਲਾ ਅਤੇ ਭਾਸ਼ਾਵਾਂ ਦੇ ਅੰਤਰਗਤ ਚੱਲ ਰਹੇ ਵਿਭਿੰਨ ਸਰਟੀਫਿਕੇਟ ਅਤੇ ਡਿਪਲੋਮਾ ਕੋਰਸਾਂ ਲਈ)

ਕ੍ਰੈਡਿਟ : 2
ਕੁੱਲ ਅੰਕ : 50
(ਪੇਪਰ : 40, ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 10)
ਸਮਾਂ : 2 ਘੰਟੇ

ਨੋਟ : ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਉੱਤੇ ਲਿਖਿਆ ਜਾਵੇਗਾ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੋਵੇਗਾ। ਵਿਦਿਆਰਥੀ ਨੇ ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਇੱਕ ਸੁਆਲ ਕਰਨਾ ਹੈ। ਕੁੱਲ ਪੰਜ ਸੁਆਲ ਕਰਨੇ ਹਨ।
2. ਹਰ ਪ੍ਰਸ਼ਨ 08 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਪੇਪਰ ਸੈੱਟਰ ਲਈ ਹਿਦਾਇਤਾਂ :

1. ਪੇਪਰ ਸੈੱਟਰ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਵਿੱਚ ਕੁੱਲ ਨੌ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇਗਾ।
2. ਪ੍ਰਸ਼ਨ ਨੰਬਰ ਇੱਕ ਵਿੱਚ ਚਾਰ ਛੋਟੇ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ ਜੋ ਕਿ ਸਲੇਬਸ ਵਿੱਚ ਦਿੱਤੇ ਟਾਪਿਕਾਂ ਵਿੱਚੋਂ ਹੋਣਗੇ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ।
3. ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਮੁੱਢਲਾ ਗਿਆਨ ਪ੍ਰਦਾਨ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

- **CCP (OE).1** ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਧੁਨੀਆਂ ਅਤੇ ਅੱਖਰਾਂ ਦਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ।
- **CCP (OE).2** ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਸ਼ਬਦ ਰਚਨਾ ਅਤੇ ਸ਼ਬਦ ਜੋੜਾਂ ਦਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ।
- **CCP (OE).3** ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਿਆਕਰਣਿਕ ਸ਼੍ਰੇਣੀਆਂ ਬਾਰੇ ਮੁੱਢਲਾ ਗਿਆਨ ਹਾਸਲ ਹੋਵੇਗਾ।
- **CCP (OE).4** ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਾਕ ਰਚਨਾ ਵਾਕ ਵੰਡ ਬਾਰੇ ਮੁੱਢਲਾ ਗਿਆਨ ਹਾਸਲ ਹੋਵੇਗਾ।

ਯੂਨਿਟ ਪਹਿਲਾ

ਧੁਨੀ/ ਅੱਖਰ ਬੋਧ

ਅੱਖਰਾਂ/ ਵਰਣਾਂ ਦੀ ਪਛਾਣ, ਅੱਖਰ ਉਚਾਰਣ, ਲਗਾਂ ਮਾਤਰਾਵਾਂ, ਲਗਾਖਰ, ਸਵਰ-ਵਿਅੰਜਨ

ਯੂਨਿਟ ਦੂਸਰਾ

ਸ਼ਬਦ ਬੋਧ ਤੇ ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨਿਯਮ

ਸ਼ਬਦ ਜੋੜ ਨਿਯਮ ਅਤੇ ਸ਼ਬਦ ਜੋੜ

ਪੰਜਾਬੀ ਸ਼ਬਦ ਬਣਤਰ ਅਤੇ ਸ਼ਬਦ ਰਚਨਾ (ਅਗੇਤਰ ਤੇ ਪਿਛੇਤਰ)

ਯੂਨਿਟ ਤੀਸਰਾ

ਵਿਆਕਰਣਕ ਸ਼੍ਰੇਣੀਆਂ

ਵਿਆਕਰਣਕ ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ-ਨਾਂਵ, ਪੜਨਾਂਵ, ਵਿਸ਼ੇਸ਼ਣ, ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ, ਸਬੰਧਕ, ਯੋਜਕ ਅਤੇ ਵਿਸਮਿਕ ਦੀ ਸੰਖੇਪ ਜਾਣਕਾਰੀ

ਯੂਨਿਟ ਚੌਥਾ

ਵਾਕ ਬੋਧ

ਵਾਕ ਰਚਨਾ, ਵਾਕ ਵੰਡ-ਸਾਧਾਰਨ, ਮਿਸ਼ਰਤ ਅਤੇ ਸੰਯੁਕਤ ਵਾਕ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਸ. ਸ. ਖਹਿਰਾ, **ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਵਿਆਕਰਣ ਅਤੇ ਬਣਤਰ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2011
2. ਹਰਕੀਰਤ ਸਿੰਘ, **ਪੰਜਾਬੀ ਸ਼ਬਦ ਰੂਪ ਅਤੇ ਸ਼ਬਦ ਜੋੜ ਕੋਸ਼,**ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1988
3. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ, **ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਣ,** ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ, ਪਟਿਆਲਾ, 2006
4. **ਅਜੋਕੀ ਪੰਜਾਬੀ ਦਾ ਵਿਆਕਰਣ ਅਤੇ ਲੇਖ ਰਚਨਾ**, ਪੰਜਾਬ ਸਕੂਲ ਸਿੱਖਿਆ ਬੋਰਡ, ਮੋਹਾਲੀ, 2012
5. Gurinder Singh Mann, **An Introduction to Punjabi,** Punjabi University, Patiala.
6. ਡਾ. ਸਤਨਾਮ ਸਿੰਘ ਸੰਧੂ, **ਆਏਂ ਪੰਜਾਬੀ ਸੀਖੇਂ**, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
7. Dr. Hardev Singh Bahri, **Teach Yourself Panjabi,** Publication Buraeu, Punjabi University, Patiala.
8. Henry A. Gleason, JR., Harjeet Singh Gill, **A Start In Punjabi**, Publication Buraeu, Punjabi University, Patiala.
9. Ujjal Singh Bahri, Parmjit Singh Walia, **Introductory Punjabi**, Publication Buraeu, Punjabi University, Patiala.
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(ਸਰਟੀਫਿਕੇਟ ਕੋਰਸ ਇਨ ਪੰਜਾਬੀ)
CCP-103**

Course Code	Name of the Course	Credits	Teaching Scheme (Hrs./Week)	Examination Scheme (Marks)			
				Theory Exam.	Internal Assessment	Total	Duration
CCP-103	हिंदी भाषा और व्याकरण	02	02	40	10	50	02 Hrs
Or							
CCP-103	**Personality Development**	02	02	40	10	50	02 Hrs

** For Paper CCP-103 two papers are offered and students will have to choose any one out of these two papers.

हिंदी भाषा और व्याकरण

क्रेडिट - 2 **कुल अंक-50**

समय- 2 घंटे, **परीक्षा अंक - 40, आंतरिक मूल्यांकन - 10**

परीक्षा संबधी निर्देश –

- निर्धारित पाठ्यक्रम में से 10 प्रश्न दिए जायेंगे। विद्यार्थी को किन्हीं 05 का उत्तर देना होगा। प्रत्येक के लिए 06 अंक निर्धारित हैं।
- निर्धारित समस्त पाठ्यक्रम में 10 वस्तुनिष्ठ प्रश्न पूछे जाएंगें। विद्यार्थी को प्रत्येक का उत्तर देना होगा। इसमें कोई विकल्प नहीं होगा। प्रत्येक के लिए 01 अंक निर्धारित हैं।

पाठ्यक्रम का उद्देश्य

हिंदी भाषा व व्याकरण का ज्ञान।

पाठ्यक्रम के अपेक्षित परिणाम

- हिंदी भाषा की संरचना से परिचय।
- हिंदी भाषा के विविध रूपों से परिचय।

पाठ्य विषय

- हिंदी के विविध रूप (राष्ट्रभाषा, राजभाषा, संपर्क भाषा),
- हिंदी भाषा और भारतीय संविधान,
- हिंदी की बोलियां।
- व्याकरण का स्वरूप और महत्व
- देवनागरी लिपि का मानकीकरण।
- हिंदी की वर्ण-व्यवस्था: स्वर एवं व्यंजन।
- हिंदी भाषा शब्द भंडार - तत्सम, तद्भव, देशज, विदेशी
- शब्द निर्माण – उपसर्ग, प्रत्यय,
- पर्यायवाची शब्द, विलोम शब्द,
- संज्ञा, सर्वनाम, विशेषण, क्रिया
- मुहावरे, लोकोक्तियां
- हिंदी वाक्य रचना, वाक्य और उपवाक्य, वाक्य के भेद
- शब्द शुद्धि और वाक्य शुद्धि
- पारिभाषिक शब्दावली

सहायक पुस्तकें

- हिन्दी व्याकरण - कामता प्रसाद गुरु
- हिन्दी शब्दानुशासन - किशोरीदास वाजपेयी
- हिन्दी भाषा की संरचना - भोलानाथ तिवारी
- परिष्कृत हिन्दी व्याकरण - बदरी नाथ कपूर
- सामान्य हिन्दी - हरदेव बाहरी
- सामान्य हिन्दी - डॉ. पृथ्वी नाथ पाण्ड

Personality Development (open Elective)
Certificate Course in Panjabi

Credits: 02 **Time: 02 Hours**
M.M: 50 **Theory: 40, Internal Assessment: 10**

Paper Code:
CCP-103 : Certificate Course in Panjabi

Note: All questions are compulsory. Each question carries 10 marks.

1. The paper setter will set eight questions from Unit I to IV. (two from each unit)
2. The student shall attempt four questions in all choosing one from each unit.

Course Outcomes:

1. The students will learn the basics of personality.
2. They will learn the qualities of mentorship.
3. They will understand the importance of etiquettes in profession.
4. They will be acquainted with the parameters of verbal and non-verbal discussion.

UNIT – I

1. Definition and basics of personality
2. Body Language and Para Language
3. Self-introduction

UNIT – II

1. Listening skills
2. Barriers to listening
3. Overcoming the barriers

UNIT – III

1. Introduction to leadership
2. Group Dynamics/ Discussion
3. Qualities of Leadership

UNIT – IV

1. Public speaking/ Group discussions/ Voice modulation
2. Etiquettes related to professional competence
3. Grooming basics

ਇੰਸਟੀਟਿਊਟ ਆਫ਼ ਇੰਟੇਗ੍ਰੇਟਿਡ ਐਂਡ ਆਨਰਜ਼ ਸਟੱਡੀਜ਼ (IIHS)
ਕੁਰੂਕਸ਼ੇਤਰ ਯੂਨੀਵਰਸਿਟੀ, ਕੁਰੂਕਸ਼ੇਤਰ
ਸਕੀਮ ਆਫ਼ ਐਗਜ਼ਾਮੀਨੇਸ਼ਨ ਅਤੇ ਸਿਲੇਬਸ
ਬੀ. ਏ. (ਪ੍ਰੋਗਰਾਮ) ਪੰਜਾਬੀ (ਆਨਰਜ਼)
ਸੀ. ਬੀ. ਸੀ. ਐੱਸ (ਚੋਣ ਆਧਾਰਤ ਕ੍ਰੈਡਿਟ ਪੱਧਤੀ), LOCF
ਸੈਸ਼ਨ 2020-21 ਤੋਂ ਪੜਾਅਵਾਰ ਲਾਗੂ

INSTITUTE OF INTEGRATED STUDIES
KURUKSHETRA UNIVERSITY KURUKSHETRA
Scheme of Examination & Syllabus
B. A. (Programme) Panjabi (Hons.)
CBCS (Choice Based Credit System), LOCF
To be implemented w.e.f Session 2020-21(In Phased Manner)

ਕੋਰਸ ਕੋਡ (Course Code)	ਕੋਰਸ ਦਾ ਨਾਮ (Subject)	ਕ੍ਰੈਡਿਟ (Credits)	ਪੀਰੀਅਡ ਪ੍ਰਤੀ ਹਫ਼ਤਾ (Periods Per Week)	ਪ੍ਰੀਖਿਆ ਦੀ ਸਕੀਮ (Scheme of Examination)			
				ਪ੍ਰੀਖਿਆ (Theory)	ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ (Internal Assessment)	ਕੁੱਲ ਅੰਕ (Total Marks)	ਸਮਾਂ (Time)
ਸਮੈਸਟਰ ਪਹਿਲਾ (Semester I)							
BH-PBI-CC-101	ਗੁਰਮਤਿ ਕਾਵਿ (Gurmat Kav)	06	06	120	30	150	03 Hrs
BH-PBI-CC-102	ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਹਾਣੀ (Aadhunik Punjabi Kahani)	06	06	120	30	150	03 Hrs
BH-PBI-AECC-103*	ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ (Punjabi Bhasha : Mudhli Jaan Pachhan)	02	02	40	10	50	02 Hrs
BH-PBI-GE-104	ਪੰਜਾਬੀ ਸਫ਼ਰਨਾਮਾ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ (Punjabi Safarnama Ate Viharak Punjabi)	06	06	120	30	150	03 Hrs
ਸਮੈਸਟਰ ਦੂਜਾ (Semester II)							
BH-PBI-CC-201	ਪੰਜਾਬੀ ਸੂਫ਼ੀ ਕਾਵਿ (Punjabi Sufi Kav)	06	06	120	30	150	03 Hrs
BH-PBI-CC-202	ਨਵੀਨ ਪੰਜਾਬੀ ਵਾਰਤਕ (Naveen Punjabi Vartak)	06	06	120	30	150	03 Hrs
BH-PBI-GE-203	ਪੰਜਾਬੀ ਮਹਾਂਕਾਵਿ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ (Punjabi Mahakav Ate Viharak Punjabi)	06	06	120	30	150	03 Hrs
ਸਮੈਸਟਰ ਤੀਜਾ (Semester III)							
BH-PBI-CC-301	ਪੰਜਾਬੀ ਲੋਕਧਾਰਾ ਅਤੇ ਸਭਿਆਚਾਰ (Punjabi Lokdhara Ate Sabhyachar)	06	06	120	30	150	03 Hrs
BH-PBI-CC-302	ਪੰਜਾਬੀ ਨਾਵਲ (Punjabi Naval)	06	06	120	30	150	03 Hrs
BH-PBI-CC-303	ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ (Aadhunik Punjabi Kavita)	06	06	120	30	150	03 Hrs
BH-PBI-GE-304	ਪੰਜਾਬੀ ਗ਼ਜ਼ਲ਼ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ (Punjabi Gazal Ate Viharak Punjabi)	06	06	120	30	150	03 Hrs
ਸਮੈਸਟਰ ਚੌਥਾ (Semester IV)							
BH-PBI-CC-401	ਮੱਧਕਾਲੀ ਬਿਰਤਾਂਤਕ ਕਾਵਿ (Madhkali Birtantak Kav)	06	06	120	30	150	03 Hrs
BH-PBI-CC-402	ਪੰਜਾਬੀ ਗਦਰ ਕਾਵਿ ਅਤੇ ਕ੍ਰਾਂਤੀਕਾਰੀ ਲਹਿਰਾਂ (Punjabi Gadar Kav Ate Krantikari Lehran)	06	06	120	30	150	03 Hrs

BH-PBI-CC-403	ਪੰਜਾਬੀ ਨਾਟਕ (Punjabi Natak)	06	06	120	30	150	03 Hrs
BH-PBI-GE-404	ਪੰਜਾਬੀ ਇਕਾਂਗੀ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ (Punjabi Ikangi Ate Viharak Punjabi)	06	06	120	30	150	03 Hrs
ਸਮੈਸਟਰ ਪੰਜਵਾਂ (Semester V)							
BH-PBI-CC-501	ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ (Parvasi Punjabi Sahit)	06	06	120	30	150	03 Hrs
BH-PBI-CC-502	ਸਾਹਿਤ ਸਿਧਾਂਤ, ਭਾਰਤੀ ਅਤੇ ਯੂਨਾਨੀ ਕਾਵਿ ਸ਼ਾਸਤਰ (Sahit Sidhant, Bharti Ate Unani Kav Shastar)	06	06	120	30	150	03 Hrs
BH-PBI-DSE-503 or BH-PBI-DSE-504 Or MOOC**	ਭਾਰਤੀ ਸਾਹਿਤ (Bharti Sahit) or ਵਿਸ਼ਵ ਸਾਹਿਤ (Vishav Sahit)	06	06	120	30	150	03 Hrs
BH-PBI-GE-505	ਹਰਿਆਣਾ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ (Haryana Da Punjabi Sahit Ate Viharak Punjabi)	06	06	120	30	150	03 Hrs
ਸਮੈਸਟਰ ਛੇਵਾਂ (Semester VI)							
BH-PBI-CC-601	ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ (Pakistani Punjabi Sahit)	06	06	120	30	150	03 Hrs
BH-PBI-CC-602	ਪੰਜਾਬੀ ਆਲੋਚਨਾ : ਸਿਧਾਂਤ ਤੇ ਵਿਹਾਰ (Punjabi Aalochana : Sidhant Ate Vihar)	06	06	120	30	150	03 Hrs
BH-PBI-DSE-603 or BH-PBI-DSE-604 Or MOOC**	ਪੰਜਾਬੀ ਭਾਸ਼ਾ, ਲਿੱਪੀ ਅਤੇ ਪਿੰਗਲ ਅਰੂਜ਼ (Punjabi Bhasha, Lipi Ate Pingal Arooz) or ਦੇਸ਼ ਵੰਡ ਅਤੇ ਪੰਜਾਬ ਸੰਤਾਪ ਉੱਪਰ ਪੰਜਾਬੀ ਸਾਹਿਤ (Desh Vand Ate Punjab Santap Uppar Punjabi Sahit)	06	06	120	30	150	03 Hrs
BH-PBI-GE-605	ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਨਾਟਕ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ (Pakistani Punjabi Natak Ate Viharak Punjabi)	06	06	120	30	150	03 Hrs
ਸਮੈਸਟਰ ਤੀਜਾ/ ਚੌਥਾ (Semester III/IV)							
BH-PBI-SEC-1***	ਸਿਰਜਣਾਤਮਕ ਲੇਖਣ ਦਾ ਹੁਨਰ : ਅਧਿਐਨ ਅਤੇ ਸਿਖਲਾਈ (Sirjnatmak Lekhan Da Hunar : Adhyan Ate Sikhlai)	02	02	40	10	50	02 Hrs
BH-PBI-SEC-2***	ਫ਼ਿਲਮਸਾਜ਼ੀ ਦਾ ਹੁਨਰ : ਅਧਿਐਨ ਤੇ ਸਿਖਲਾਈ (Filmsazi Da Hunar : Adhyan Ate Sikhlai)	02	02	40	10	50	02 Hrs

* **Student will opt AECC Panjabi in Semester I, II or III according to the Time Table adjustment in the Institute.**

** **MOOC course available on the SWAYAM portal**

*** **Student will opt any one out of these two Skill Enhanced Courses in Semester IIIrd or IVth according to the Time Table adjustment in the Institute.**

ਕੁਰੂਕਸ਼ੇਤਰ ਯੂਨੀਵਰਸਿਟੀ, ਕੁਰੂਕਸ਼ੇਤਰ ਦੇ ਇੰਸਟੀਟਿਊਟ ਆਫ਼ ਇੰਟੇਗ੍ਰੇਟਿਡ ਐਂਡ ਆਨਰਜ਼ ਸਟੱਡੀਜ਼ (IIHS) ਦੇ ਬੀ. ਏ. ਆਰਟਸ, ਸੀ. ਬੀ. ਸੀ. ਐੱਸ (CBCS) ਪ੍ਰੋਗਰਾਮ/ ਪਾਠਕ੍ਰਮ ਦੇ ਪ੍ਰਾਪਤ ਸੰਭਾਵਿਤ ਨਤੀਜੇ (LOCF)

1	ਮਾਨਵ ਸਮਾਜ ਵਿਗਿਆਨ ਅਤੇ ਭਾਸ਼ਾਵਾਂ ਦੇ ਪ੍ਰਮੁੱਖ ਵਿਸ਼ਿਆਂ ਦੇ ਅਧਿਐਨ ਲਈ ਚੁਣੇ ਹੋਏ ਖੇਤਰਾਂ ਸਬੰਧੀ ਵਿਸਤ੍ਰਿਤ ਜਾਣਕਾਰੀ ਅਤੇ ਸਮਝ ਵਿਕਸਤ ਹੋਵੇਗੀ।
2	ਜਟਿਲ ਅਤੇ ਬਦਲਦੇ ਸਮਾਜਿਕ ਸੰਦਰਭਾਂ ਦੀ ਪਛਾਣ ਅਤੇ ਸਮਾਧਾਨ ਲਈ ਮਹੱਤਵਪੂਰਨ ਅਤੇ ਵਿਸ਼ਲੇਸ਼ਣਾਤਮਕ ਕੌਸ਼ਲ ਦੇ ਢੰਗ ਤਰੀਕੇ ਪੈਦਾ ਕੀਤੇ ਜਾਣਗੇ।
3	ਮਾਨਵ ਸਮਾਜ ਵਿਗਿਆਨ ਅਤੇ ਭਾਸ਼ਾਵਾਂ ਦੇ ਪ੍ਰਮੁੱਖ ਵਿਸ਼ਿਆਂ ਦੇ ਬਾਹਰੀ ਅਧਿਐਨ ਲਈ ਚੁਣੇ ਹੋਏ ਖੇਤਰਾਂ ਦੇ ਸੰਕਲਪਾਂ ਅਤੇ ਸਿਧਾਂਤਾਂ ਪ੍ਰਤੀ ਆਮ ਸਮਝ ਪੈਦਾ ਕੀਤੀ ਜਾਵੇਗੀ।
4	ਗਿਆਨ ਪੱਧਤੀ ਲਈ ਇੱਕ ਸੁਤੰਤਰ ਅਤੇ ਨਿਰਪੱਖ ਦ੍ਰਿਸ਼ਟੀਕੋਣ ਵਿਕਸਤ ਹੋਵੇਗਾ ਜਿਹੜਾ ਪਰਖ-ਪੜਚੋਲ ਅਤੇ ਸਿਧਾਂਤਾਂ ਦੇ ਉੱਚਿਤ ਢੰਗ ਤਰੀਕਿਆਂ ਦੀ ਵਰਤੋਂ ਕਰਦਾ ਹੋਵੇਗਾ।
5	ਗਿਆਨ ਦੇ ਵਿਭਿੰਨ ਰੂਪਾਂ ਅਤੇ ਉਹਨਾਂ ਨੂੰ ਪੈਦਾ ਕਰਨ ਵਾਲੇ ਸਮਾਜਿਕ, ਇਤਿਹਾਸਕ ਅਤੇ ਸਭਿਆਚਾਰਕ ਸੰਦਰਭਾਂ ਦੀ ਪਛਾਣ ਕਰਕੇ ਉਹਨਾਂ ਦੇ ਆਪਸੀ ਸਬੰਧਾਂ ਬਾਰੇ ਸਪੱਸ਼ਟਤਾ ਪੈਦਾ ਕੀਤੀ ਜਾਵੇਗੀ।
6	ਪ੍ਰਭਾਵਮਈ ਅਤੇ ਸੁਚੱਜੇ ਢੰਗ ਨਾਲ ਸੰਵਾਦ ਸਥਾਪਿਤ ਕਰਨ ਦੇ ਨਾਲ-ਨਾਲ ਪ੍ਰਵਾਹਮਈ ਵੇਗ ਵਿੱਚ ਇੱਕ ਖਾਸ ਭਾਸ਼ਾ ਵਿੱਚ ਸੁਣਨ, ਲਿਖਣ, ਬੋਲਣ ਅਤੇ ਪੜ੍ਹਨ ਦੀ ਸਮਰੱਥਾ ਪੈਦਾ ਹੋਵੇਗੀ।
7	ਵਿਦਵਾਨਾਂ ਦੇ ਸਮੂਹ ਅਤੇ ਕਾਰਜ ਸਥਾਨ ਤੇ ਪ੍ਰਭਾਵੀ ਅਤੇ ਗੰਭੀਰ ਰੂਪ ਵਿੱਚ ਇੱਕ ਸਮਝਦਾਰ ਅਤੇ ਸਿਆਣੇ ਪ੍ਰਤੀਭਾਗੀ ਵਾਂਗ ਅਨੁਸ਼ਾਸਨਾਤਮਕ ਰੂਪ ਵਿੱਚ ਕੰਮ ਕਰਨ ਦੀ ਸਮਰੱਥਾ ਪੈਦਾ ਹੋਵੇਗੀ।
8	ਕਾਰਜ ਸਥਾਨ ਅਤੇ ਵਿਅਕਤੀਗਤ ਰੂਪ ਜੀਵਨ ਵਿੱਚ ਆਉਣ ਵਾਲੀਆਂ ਚੁਣੌਤੀਆਂ ਅਤੇ ਉਹਨਾਂ ਦਾ ਸਾਹਮਣਾ ਕਰਨ ਲਈ ਸੁਤੰਤਰ, ਸਵੈ-ਪ੍ਰਤੀਬਿੰਬਤ ਅਤੇ ਰਚਨਾਤਮਕ/ ਸਿਰਜਣਾਤਮਕ ਰੂਪ ਵਿੱਚ ਕੰਮ ਕਰਨ ਦੀ ਭਾਵਨਾਂ ਪੈਦਾ ਹੋਵੇਗੀ

ਬੀ. ਏ. ਪੰਜਾਬੀ (ਆਨਰਜ਼) ਪ੍ਰੋਗਰਾਮ/ ਪਾਠਕ੍ਰਮ ਦੇ ਅਧਿਐਨ ਉਪਰੰਤ ਸੰਭਾਵਿਤ ਵਿਸ਼ੇਸ਼ ਨਤੀਜੇ :

1. ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ, ਭਾਸ਼ਾ ਵਿਗਿਆਨ, ਸਭਿਆਚਾਰ ਅਤੇ ਲੋਕਧਾਰਾ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਵਿਹਾਰਕ ਅਧਿਐਨ/ ਪ੍ਰਯੋਗ ਦਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ।
2. ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਵਿਭਿੰਨ ਸਮਿਆਂ ਵਿੱਚ ਪ੍ਰਾਪਤ ਸਾਹਿਤ, ਸਾਹਿਤਕ ਧਾਰਾਵਾਂ, ਸਾਹਿਤਕਾਰਾਂ ਦੇ ਜੀਵਨ, ਸਿਰਜਣ ਪ੍ਰਕ੍ਰਿਆ, ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਅਤੇ ਲੋਕਧਾਰਾ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ਨੂੰ ਜਿੱਥੇ ਸਮਝਣ/ ਮੁਲਾਂਕਣ ਕਰਨ ਦੀ ਸੂਝ/ ਸਮਝ ਵਿਕਸਤ ਹੋਵੇਗੀ ਉੱਥੇ ਉਹਨਾਂ ਵਿੱਚ ਉਸ ਸਮੇਂ ਨਾਲ ਸਬੰਧਤ ਸਮਾਜਿਕ, ਆਰਥਿਕ, ਰਾਜਨੀਤਿਕ ਅਤੇ ਸਭਿਆਚਾਰਕ ਸਥਿਤੀਆਂ/ ਪ੍ਰਸਥਿਤੀਆਂ ਨੂੰ ਸਮਝਣ ਦਾ ਬੋਧ ਅਤੇ ਆਲੋਚਨਾਤਮਕ ਦ੍ਰਿਸ਼ਟੀ ਵੀ ਪੈਦਾ ਹੋਵੇਗੀ।
3. ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਜਿੱਥੇ ਸਾਹਿਤਕ ਕਿਰਤਾਂ ਨੂੰ ਪੜ੍ਹਨ ਦੀ ਰੁਚੀ, ਉਹਨਾਂ ਦੇ ਵਿਅਕਤੀਤਵ ਅਤੇ ਕਿੱਤਾਮੁਖੀ ਵਿਕਾਸ ਦੀ ਉਸਾਰੀ ਵਿੱਚ ਵਾਧਾ ਹੋਵੇਗਾ ਉਥੇ ਉਹਨਾਂ ਵਿੱਚ ਰੁਜ਼ਗਾਰ ਲਈ ਭਾਸ਼ਾਈ ਕੌਸ਼ਲ, ਕੰਪਿਊਟਰ, ਅਨੁਵਾਦ, ਪੱਤਰਕਾਰਿਤਾ, ਮੀਡੀਆ, ਰੰਗਮੰਚ ਅਤੇ ਫ਼ਿਲਮਾਂ ਆਦਿ ਬਾਰੇ ਵਿਹਾਰਕ ਗਿਆਨ ਪ੍ਰਤੀ ਸਮਝ ਵੀ ਪੈਦਾ ਹੋਵੇਗੀ।
4. ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ, ਸਾਹਿਤ ਅਤੇ ਸਭਿਆਚਾਰ ਅਤੇ ਲੋਕਧਾਰਾ ਦੇ ਪ੍ਰਾਪਤ ਵਿਭਿੰਨ ਰੂਪਾਂ ਦੇ ਅਧਿਐਨ ਰਾਹੀਂ ਜਿੱਥੇ ਭਾਰਤੀ ਸਮਾਜ, ਸਭਿਆਚਾਰਕ ਜੀਵਨ ਮੁੱਲਾਂ ਦੇ ਵਿਭਿੰਨ ਪੱਖਾਂ ਵਿੱਚ ਪਈ ਸਾਂਝ ਦੇ ਵਿਭਿੰਨ ਤੱਤਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ ਉੱਥੇ ਉਹਨਾਂ ਵਿੱਚ ਕੌਮੀ ਅਤੇ ਕੌਮਾਂਤਰੀ ਸਮਾਜਾਂ ਨੂੰ ਗਲੋਬਲੀ ਪਰਿਪੇਖ ਵਿੱਚ ਸਮਝਣ ਦੀ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।

Table 1. Mapping matrix for all the Courses of B.A. (Punjabi) Honours

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
BH-PBI-CC-101	3	2.25	3	2.25	3	2.25	3	3	3	3	2.25	3
BH-PBI-CC-102	3	2.25	3	2.5	2.75	2.25	3	3	3	3	2.25	3
BH-PBI-AECC-103	3	3	3	2	2	3	3	3	3	3	3	3
BH-PBI-GE-104	3	2.75	3	2	2	3	3	3	3	3	3	2.75
BH-PBI-CC-201	3	2.25	3	2.25	3	2.25	3	3	3	3	2.25	3
BH-PBI-CC-202	3	2.25	3	2.25	3	2.25	3	3	3	3	2.25	3
BH-PBI-GE-203	3	3	2.75	2	2	2.5	3	3	3	2.75	3	3
BH-PBI-CC-301	3	2.5	3	2.5	2.5	2.75	2.75	3	3	3	3	3
BH-PBI-CC-302	3	2.25	3	2.5	2.75	2.25	3	3	3	3	2.25	3
BH-PBI-CC-303	3	2.5	3	2.5	2.75	2.25	3	3	3	3	2.25	3
BH-PBI-GE-304	3	3	3	2	2	3	3	3	3	2.75	3	3
BH-PBI-CC-401	3	2.25	3	2.5	2.75	2.25	3	3	3	3	2.25	3
BH-PBI-CC-402	2.75	2.75	3	2.75	3	2	2.75	3	3	3	2.25	3
BH-PBI-CC-403	3	2.25	3	2.5	2.75	2.25	3	3	3	3	2.5	3
BH-PBI-GE-404	3	3	3	2	2	3	3	3	3	2.75	3	3
BH-PBI-CC-501	3	3	3	2	3	2	3	3	3	3	3	2.75
BH-PBI-CC-502	3	2.5	3	2	3	2	3	3	3	3	3	2.75
BH-PBI-DSE-503	3	2.5	3	2	3	2	3	3	3	2.75	3	2.75
BH-PBI-DSE-504	3	2.75	3	2	3	2	3	3	3	3	3	2.75
BH-PBI-GE-505	3	3	3	2	3	2	3	3	3	3	3	2.75
BH-PBI-CC-601	3	2.75	3	2	3	2	3	3	3	2.75	3	2.75
BH-PBI-CC-602	3	3	3	2	3	2	3	3	3	3	3	2.75
BH-PBI-DSE-603	3	2.5	2.75	2	3	2	3	3	3	2.75	3	2.75
BH-PBI-DSE-604	3	2.5	3	2	3	2	3	3	3	2.75	3	2.75
BH-PBI-GE-605	3	3	3	2	2	3	3	3	3	3	3	3
BH-PBI-SEC-1	3	3	3	2	3	2	3	3	3	2.75	3	2.75
BH-PBI-SEC-2	3	2.75	3	3	3	3	2.75	2.75	2.5	2.75	3	3

Attainment of Cos : Attainment Level for Internal Assessment

Table given below shows the CO attainment levels assuming the set target of 60% marks :

Attainment Level	
1 (Low level of Attainment)	60% of Students score more than 60% of marks in class tests of a course
2 (Medium level of Attainment)	70% of Students score more than 55% of marks in class tests of a course
3 (High level of Attainment)	80% of Students score more than 50% of marks in class tests of a course

Table 3. CO Attainment Levels for End Semester Examination (ESE)

Attainment Level	
1 (Low level of Attainment)	60% of Students obtained letter grade of A or above (for CBCS programme) or score more than 60% of Marks (for non-CBCS programms) in ESE of a course
2 (Medium level of Attainment)	70% of Students obtained letter grade of A or above (for CBCS programme) or score more than 55% of Marks (for non-CBCS programms) in ESE of a course
3 (High level of Attainment)	80% of Students obtained letter grade of A or above (for CBCS programme) or score more than 50% of Marks (for non-CBCS programms) in ESE of a course

Semester : I
BH-PBI-CC-101

ਗੁਰਮਤਿ ਕਾਵਿ
(Gurmat Kav)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਗੁਰਬਾਣੀ, ਗੁਰਮਤਿ ਰੂਪਾਕਾਰ ਆਦਿ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਪੁਸਤਕ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਕਲਾਤਮਕ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ/ ਸੰਵਾਦ ਕਲਾ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਪੁਸਤਕ ਵਿੱਚੋਂ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਪੁਸਤਕ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਕਲਾਤਮਕ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਪੁਸਤਕ ਵਿੱਚੋਂ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਗੁਰਬਾਣੀ ਦੇ ਹਵਾਲੇ ਨਾਲ ਗੁਰਮਤਿ ਕਾਵਿ ਪਰੰਪਰਾ ਅਤੇ ਗੁਰਮਤਿ ਸਿਧਾਂਤ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-CC-101.1 ਵਿਦਿਆਰਥੀ ਗੁਰਮਤਿ ਦੇ ਸਿਧਾਂਤ ਅਤੇ ਇਤਿਹਾਸ ਦੇ ਨਾਲ-ਨਾਲ ਗੁਰਮਤਿ ਕਾਵਿ ਦੇ ਪ੍ਰਮੁੱਖ ਰੂਪਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

BH-PBI-CC-101.2 ਗੁਰਮਤਿ ਕਾਵਿ ਧਾਰਾ ਦੀ ਪੜ੍ਹਤ ਰਾਹੀਂ ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਗੁਰਬਾਣੀ ਦੀ ਸਮਕਾਲੀਨ ਪ੍ਰਸੰਗਿਕਤਾ ਅਤੇ ਮਹੱਤਵ ਪ੍ਰਤੀ ਸਮਝ ਪੈਦਾ ਹੋਵੇਗੀ।

BH-PBI-CC-101.3 ਵਿਦਿਆਰਥੀ ਗੁਰੂ ਗ੍ਰੰਥ ਸਾਹਿਬ ਦੀ ਸੰਪਾਦਨ ਕਲਾ ਦੇ ਮਹੱਤਵ ਅਤੇ ਉਸਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

BH-PBI-CC-101.4 ਵਿਦਿਆਰਥੀ ਗੁਰੂ ਗ੍ਰੰਥ ਸਾਹਿਬ ਦੇ ਸਾਹਿਤਕ ਅਤੇ ਸਮਾਜਿਕ-ਸਭਿਆਚਾਰਕ ਮਹੱਤਵ ਨੂੰ ਸਮਕਾਲੀ ਪ੍ਰਸੰਗ ਵਿੱਚ ਸਮਝਣ ਦੇ ਯੋਗ ਹੋਣਗੇ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਗੁਰਮਤਿ ਕਾਵਿ : ਸਿਧਾਂਤ, ਇਤਿਹਾਸ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ
1.1 ਗੁਰਮਤਿ ਕਾਵਿ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਸਰੂਪ
1.2 ਗੁਰਬਾਣੀ ਕਾਵਿ ਰੂਪ ਅਤੇ ਰੂਪਾਕਾਰ
1.3 ਗੁਰਬਾਣੀ ਅਤੇ ਕਵਿਤਾ ਵਿਚਲਾ ਅੰਤਰ
1.4 ਗੁਰਮਤਿ ਕਾਵਿ ਦੀ ਪਰੰਪਰਾ
1.5 ਗੁਰਮਤਿ ਕਾਵਿ ਦਾ ਸਮਾਜ-ਸਭਿਆਚਾਰਕ ਪਰਿਪੇਖ

ਯੂਨਿਟ ਦੂਜਾ

2. ਪ੍ਰੋ. ਸਾਹਿਬ ਸਿੰਘ (ਸੰਪਾ.), ***ਸਿੱਧ ਗੋਸ਼ਟਿ*** (ਗੁਰੂ ਨਾਨਕ), ਸਿੰਘ ਬ੍ਰਦਰਜ਼, ਅੰਮ੍ਰਿਤਸਰ, 2006
2.1 ਵਿਚਾਰਧਾਰਾ
2.2 ਕਾਵਿ ਕਲਾ
2.3 ਭਾਸ਼ਾ ਸ਼ੈਲੀ
2.4 ਸੰਵਾਦ ਕਲਾ
2.5 ਵਿਭਿੰਨ ਭਾਰਤੀ ਦਰਸ਼ਨ ਧਾਰਾਵਾਂ ਦਾ ਸੰਵਾਦ
2.6 ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ

ਯੂਨਿਟ ਤੀਜਾ

3. ਗੁਰੂ ਤੇਗ ਬਹਾਦਰ, ***ਸ਼ਬਦ ਤੇ ਸ਼ਲੋਕ***,
3.1 ਵਿਸ਼ਾ ਪੱਖ
3.2 ਵੈਰਾਗ ਦੀ ਭਾਵਨਾ
3.3 ਕਾਵਿ ਕਲਾ
3.4 ਭਾਸ਼ਾ ਸ਼ੈਲੀ
3.5 ਗੁਰਮਤਿ ਕਾਵਿ ਧਾਰਾ ਵਿੱਚ ਸਥਾਨ
3.6 ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਜਗਬੀਰ ਸਿੰਘ, ਗੁਰਮਤਿ ਕਾਵਿ ਦਾ ਇਤਿਹਾਸ, ਪੰਜਾਬੀ ਅਕਾਦਮੀ ਦਿੱਲੀ
2. ਅਮਰਜੀਤ ਸਿੰਘ ਕਾਂਗ, **ਮੱਧਕਾਲੀ ਸਾਹਿਤ ਅਧਿਐਨ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ
3. ਅਮਰਜੀਤ ਸਿੰਘ ਕਾਂਗ ਅਤੇ ਜਸਪਾਲ ਕੌਰ ਕਾਂਗ, **ਮੱਧਕਾਲੀ ਸਾਹਿਤ ਵਿਵੇਕ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ
4. ਹਰਚਰਨ ਸਿੰਘ (ਸੰਪਾ.), **ਖੋਜ ਪਤ੍ਰਿਕਾ (ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਵਿਸ਼ੇਸ਼ ਅੰਕ),** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1990
5. ਜਗਬੀਰ ਸਿੰਘ, **ਮੱਧਕਾਲੀ ਸਾਹਿਤ ਸਭਿਆਚਾਰ,** ਆਰਸੀ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ
6. ਜਗਬੀਰ ਸਿੰਘ, **ਬਾਣੀ ਸੰਸਾਰ,** ਆਰਸੀ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ
7. ਤਾਰਨ ਸਿੰਘ, **ਗੁਰੂ ਨਾਨਕ : ਚਿੰਤਨ ਤੇ ਕਲਾ,** ਕਸਤੂਰੀ ਲਾਲ ਐਂਡ ਸੰਨਜ਼, ਅੰਮ੍ਰਿਤਸਰ
8. ਰਤਨ ਸਿੰਘ ਜੱਗੀ , **ਖੋਜ ਪਤ੍ਰਿਕਾ (ਗੁਰਮਤਿ ਕਾਵਿ ਅੰਕ) ਅੰਕ 26,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ

Mapping Matrix of Course BH-PBI-CC-101

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-CC-101) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-CC-101

CO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**
BH-PBI-CC-101.1	**3**	**2**	**3**	**2**	**3**	**2**	**3**	**3**
BH-PBI-CC-101.2	**3**	**3**	**3**	**3**	**3**	**2**	**3**	**3**
BH-PBI-CC-101.3	**3**	**2**	**3**	**2**	**3**	**2**	**3**	**3**
BH-PBI-CC-101.4	**3**	**2**	**3**	**2**	**3**	**3**	**3**	**3**
Average	**3**	**2.25**	**3**	**2.25**	**3**	**2.25**	**3**	**3**

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-CC-101) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-CC-101

CO	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**
BH-PBI-CC-101.1	**3**	**3**	**2**	**3**
BH-PBI-CC-101.2	**3**	**3**	**2**	**3**
BH-PBI-CC-101.3	**3**	**3**	**2**	**3**
BH-PBI-CC-101.4	**3**	**3**	**3**	**3**
Average	**3**	**3**	**2.25**	**3**

Semester : I
BH-PBI-CC-102

ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਹਾਣੀ
(Aadhunik Punjabi Kahani)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਕਹਾਣੀ ਅਤੇ ਪੰਜਾਬੀ ਕਹਾਣੀ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਕਹਾਣੀਆਂ ਦੀ ਪੁਸਤਕ ਵਿਚਲੀਆਂ ਕਹਾਣੀਆਂ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਕਲਾਤਮਕ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਹਾਣੀਆਂ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਹਾਣੀਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਕਹਾਣੀਆਂ ਦੀ ਪੁਸਤਕ ਵਿਚਲੀਆਂ ਕਹਾਣੀਆਂ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਕਲਾਤਮਕ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਹਾਣੀਆਂ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਹਾਣੀਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਕਹਾਣੀ ਦੇ ਸਿਧਾਂਤਕ ਚੌਖਟੇ, ਪੰਜਾਬੀ ਕਹਾਣੀ ਦੇ ਇਤਿਹਾਸ, ਪ੍ਰਵਿਰਤੀਆਂ ਅਤੇ ਪ੍ਰਮੁੱਖ ਪੰਜਾਬੀ ਕਹਾਣੀਕਾਰਾਂ ਦੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-CC-102.1 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਕਹਾਣੀ ਅਤੇ ਪੰਜਾਬੀ ਕਹਾਣੀ ਦੇ ਵਿਧਾਗਤ ਅਤੇ ਸਿਧਾਂਤਕ ਪੱਖ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।

BH-PBI-CC-102.2 ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਕਹਾਣੀ ਦੇ ਪ੍ਰਮੁੱਖ ਝੁਕਾਵਾਂ/ ਪ੍ਰਵਿਰਤੀਆਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

BH-PBI-CC-102.3 ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਕਹਾਣੀ ਦੇ ਪ੍ਰਮੁੱਖ ਵਿਸ਼ੇਗਤ ਸਰੋਕਾਰਾਂ ਅਤੇ ਕਲਾਤਮਕ ਪਹਿਲੂਆਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

BH-PBI-CC-102.4 ਕੁਝ ਵਿਸ਼ੇਸ਼ ਕਹਾਣੀਕਾਰਾਂ ਦੀਆਂ ਕਹਾਣੀਆਂ ਦੀ ਪੜ੍ਹਤ ਦੁਆਰਾ ਕਹਾਣੀ ਟੈਕਸਟ ਦੇ ਵਿਹਾਰਕ ਅਧਿਐਨ ਦੀ ਯੋਗਤਾ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਹਾਣੀ : ਸਿਧਾਂਤ, ਇਤਿਹਾਸ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ

1.1 ਕਹਾਣੀ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਸਰੂਪ

1.2 ਕਹਾਣੀ ਦੇ ਸੰਰਚਨਾਤਮਕ ਤੱਤ

1.3 ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਹਾਣੀ ਦਾ ਨਿਕਾਸ ਅਤੇ ਵਿਕਾਸ

1.4 ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਹਾਣੀ ਦੀਆਂ ਪ੍ਰਵਿਰਤੀਆਂ

1.5 ਸਮਾਜ ਸਭਿਆਚਾਰਕ ਸਰੋਕਾਰ

ਯੂਨਿਟ ਦੂਜਾ

2. ਕੁਲਵੰਤ ਸਿੰਘ ਵਿਰਕ, ***ਮੇਰੀਆਂ ਸ੍ਰੇਸ਼ਠ ਕਹਾਣੀਆਂ***, ਨਵਯੁਗ ਪਬਲਿਸ਼ਰਜ਼, ਦਿੱਲੀ

2.1 ਵਿਸ਼ਾ ਵਸਤੂ

2.2 ਕਹਾਣੀ ਕਲਾ

2.3 ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ

2.4 ਥੀਮਕ ਅਧਿਐਨ

2.5 ਕਹਾਣੀਆਂ ਦੇ ਸਰੋਕਾਰ

ਯੂਨਿਟ ਤੀਜਾ

3. ਜਸਬੀਰ ਰਾਣਾ (ਸੰਪਾ.), ***ਕਿੰਨਰਾਂ ਦਾ ਵੀ ਦਿਲ ਹੁੰਦਾ ਹੈ***, ਪੰਜਾਬੀ ਸਾਹਿਤ ਪਬਲੀਕੇਸ਼ਨ, ਸੰਗਰੂਰ, 2015

3.1 ਵਿਸ਼ਾ ਪੱਖ

3.2 ਕਥਾ ਜੁਗਤਾਂ

3.3 ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ

3.4 ਸਰੋਕਾਰਕ ਅਧਿਐਨ

3.5 ਕਿੰਨਰ ਸਮਾਜ ਦੇ ਮਸਲੇ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਸਵਿੰਦਰ ਸਿੰਘ ਉੱਪਲ, **ਪੰਜਾਬੀ ਕਹਾਣੀ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1995
2. ਸਵਿੰਦਰ ਸਿੰਘ ਉੱਪਲ, **ਪੰਜਾਬੀ ਕਹਾਣੀ ਦੇ ਲੱਛਣ ਅਤੇ ਪਰਿਵਰਤਨ,** ਪੁਸ਼ਪ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ, 1970
3. ਗੁਰਬਖਸ਼ ਸਿੰਘ ਫ਼ਰੈਂਕ, **ਨਿੱਕੀ ਕਹਾਣੀ ਅਤੇ ਪੰਜਾਬੀ ਨਿੱਕੀ ਕਹਾਣੀ,** ਪੰਜਾਬੀ ਰਾਈਟਰਜ਼ ਕੋਆਪਰੇਟਿਵ ਸੁਸਾਇਟੀ ਲਿਮ., ਲੁਧਿਆਣਾ, 1988
4. ਜੋਗਿੰਦਰ ਸਿੰਘ ਨਹਿਰੂ, **ਕਹਾਣੀ ਦੀ ਵਿਧਾ,** ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ
5. ਜੋਗਿੰਦਰ ਸਿੰਘ ਰਾਹੀ ਅਤੇ ਰਮਿੰਦਰ ਕੌਰ, **ਪੰਜਾਬੀ ਕਹਾਣੀ ਦਾ ਸਫ਼ਰ ਤੇ ਸ਼ਾਸਤ੍ਰ (ਭਾਗ ਪਹਿਲਾ ਤੇ ਦੂਜਾ)** ਸਿੰਘ ਬ੍ਰਦਰਜ਼, ਅੰਮ੍ਰਿਤਸਰ, 2011
6. ਟੀ. ਆਰ. ਵਿਨੋਦ, **ਪੰਜਾਬੀ ਕਹਾਣੀ ਅਧਿਐਨ,** ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ, 1988
7. ਧਨਵੰਤ ਕੌਰ, **ਪੰਜਾਬੀ ਕਹਾਣੀ : ਬਿਰਤਾਂਤ ਸ਼ਾਸਤਰੀ ਅਧਿਐਨ,** ਆਰਸੀ ਪਬਲੀਕੇਸ਼ਨ, ਦਿੱਲੀ
8. ਬਲਦੇਵ ਸਿੰਘ ਧਾਲੀਵਾਲ, **ਪੰਜਾਬੀ ਕਹਾਣੀ ਦਾ ਇਤਿਹਾਸ,** ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 2005
9. ਰਾਜਿੰਦਰ ਸਿੰਘ (ਸੰਪਾ.), **ਕੁਲਵੰਤ ਸਿੰਘ ਵਿਰਕ ਦਾ ਬਿਰਤਾਂਤ ਸ਼ਾਸਤਰ,** ਅਲਕਾ ਸਾਹਿਤ ਸਦਨ, ਅੰਮ੍ਰਿਤਸਰ, 2006
10. ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ, **ਕੁਲਵੰਤ ਸਿੰਘ ਵਿਰਕ ਦਾ ਕਹਾਣੀ ਸੰਸਾਰ,** ਲਾਹੌਰ ਬੁੱਕ ਸ਼ਾਪ, ਲੁਧਿਆਣਾ, 1998

Mapping Matrix of Course BH-PBI-CC-102

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-CC-102) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-CC-102

CO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**
BH-PBI-CC-102.1	**3**	**2**	**3**	**3**	**3**	**2**	**3**	**3**
BH-PBI-CC-102.2	**3**	**3**	**3**	**3**	**3**	**2**	**3**	**3**
BH-PBI-CC-102.3	**3**	**2**	**3**	**2**	**3**	**2**	**3**	**3**
BH-PBI-CC-102.4	**3**	**2**	**3**	**2**	**2**	**3**	**3**	**3**
Average	**3**	**2.25**	**3**	**2.5**	**2.75**	**2.25**	**3**	**3**

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-CC-102) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-CC-102

CO	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**
BH-PBI-CC-102.1	**3**	**3**	**2**	**3**
BH-PBI-CC-102.2	**3**	**3**	**2**	**3**
BH-PBI-CC-102.3	**3**	**3**	**2**	**3**
BH-PBI-CC-102.4	**3**	**3**	**3**	**3**
Average	**3**	**3**	**2.25**	**3**

Semester : I

BH-PBI-AECC-103

ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ

(Punjabi Bhasha : Mudhli Jaan Pachhan)

ਕ੍ਰੈਡਿਟ : 2

ਸਮਾਂ : 2 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 50

(ਪੇਪਰ : 40, ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 10)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 10 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਪੰਜ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਪੰਜੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਦੋ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ 5 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਮੁੱਢਲਾ ਗਿਆਨ ਪ੍ਰਦਾਨ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-Pbi -AECC-103.1	ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਸ਼ਬਦ ਰਚਨਾ, ਲਗਾਂ ਮਾਤਰਾ ਅਤੇ ਸ਼ਬਦ-ਜੋੜ ਨੇਮਾਂ ਦਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ।
BH-Pbi -AECC-103.2	ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਦੀਆਂ ਵਿਆਕਰਣਿਕ ਸ਼੍ਰੇਣੀਆਂ ਬਾਰੇ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ।
BH-Pbi -AECC-103.3	ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਾਕ, ਵਾਕ ਰਚਨਾ ਅਤੇ ਅਰਥ ਬੋਧ ਅਤੇ ਪੰਜਾਬੀ ਅਰਥ ਵਿਗਿਆਨ ਦੀ ਮੁੱਢਲੀ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।
BH-Pbi -AECC-103.4	ਪੰਜਾਬੀ ਵਿੱਚ ਪੱਤਰ ਲੇਖਣ ਦੀ ਜਾਣਕਾਰੀ ਅਤੇ ਪੱਤਰ ਲੇਖਣ ਵਿੱਚ ਮੁਹਾਰਤ ਹਾਸਿਲ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਧੁਨੀ/ ਅੱਖਰ ਬੋਧ

1.1 ਅੱਖਰਾਂ/ ਵਰਣਾਂ ਦੀ ਪਛਾਣ

1.2 ਅੱਖਰ ਉਚਾਰਣ

1.3 ਲਗਾਂ ਮਾਤਰਾਵਾਂ ਅਤੇ ਲਗਾਖਰ

1.4 ਸਵਰ-ਵਿਅੰਜਨ

1.5 ਸ਼ਬਦ ਜੋੜ ਨਿਯਮ

ਯੂਨਿਟ ਦੂਸਰਾ

2. ਸ਼ਬਦ ਬੋਧ ਤੇ ਵਿਆਕਰਣਕ ਸ਼੍ਰੇਣੀਆਂ

2.1 ਸ਼ਬਦ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਸ਼ਬਦ ਬਣਤਰ,

2.2 ਸ਼ਬਦ ਰਚਨਾ (ਅਗੇਤਰ, ਪਿਛੇਤਰ)

2.3 ਵਿਆਕਰਣਕ ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ-ਨਾਂਵ, ਪੜਨਾਂਵ, ਵਿਸ਼ੇਸ਼ਣ, ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ, ਸਬੰਧਕ, ਯੋਜਕ, ਵਿਸਮਿਕ ਅਤੇ ਪਾਰਟੀਕਲਜ਼ (ਨਿਪਾਤ) ਦੀ ਸੰਖੇਪ ਜਾਣਕਾਰੀ

ਯੂਨਿਟ ਤੀਸਰਾ

3. ਵਾਕ ਬੋਧ ਅਤੇ ਅਰਥ ਬੋਧ

3.1 ਵਾਕ : ਅਰਥ, ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵਾਕ ਰਚਨਾ

3.2 ਵਾਕ ਵੰਡ

3.3 ਅਰਥ : ਅਰਥ, ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਪੰਜਾਬੀ ਅਰਥਾਵਲੀ (ਸਮਾਨਾਰਥਕ ਸ਼ਬਦ, ਬਹੁਅਰਥਕ ਸ਼ਬਦ, ਵਿਰੋਧਾਰਥਕ ਸ਼ਬਦ, ਵਿਪਰੀਤਆਰਥਕ ਸ਼ਬਦ

3.4 ਚਿੱਠੀ ਪੱਤਰ ਲੇਖਣ : ਅਰਥ, ਕਿਸਮਾਂ ਅਤੇ ਨਿਯਮ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

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2. ਹਰਕੀਰਤ ਸਿੰਘ, **ਪੰਜਾਬੀ ਸ਼ਬਦ ਰੂਪ ਅਤੇ ਸ਼ਬਦ ਜੋੜ ਕੋਸ਼,**ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1988
3. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ, **ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਣ,** ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ, ਪਟਿਆਲਾ, 2●●6
4. **ਅਜੋਕੀ ਪੰਜਾਬੀ ਦਾ ਵਿਆਕਰਣ ਅਤੇ ਲੇਖ ਰਚਨਾ**, ਪੰਜਾਬ ਸਕੂਲ ਸਿੱਖਿਆ ਬੋਰਡ, ਮੋਹਾਲੀ, 2●12
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7. Dr. Hardev Singh Bahri, **Teach Yourself Panjabi,** Publication Buraeu, Punjabi University, Patiala.
8. Henry A. Gleason, JR., Harjeet Singh Gill, **A Start In Punjabi**, Publication Buraeu, Punjabi University, Patiala.
9. Ujjal Singh Bahri, Parmjit Singh Walia, **Introductory Punjabi**, Publication Buraeu, Punjabi University, Patiala.
10. Pinderjeet K. Gill, **Conversational Punjabi (ਪੰਜਾਬੀ ਵਿੱਚ ਗੱਲ-ਬਾਤ)**, Unistar Books Pvt. Ltd, Chandigarh

Mapping Matrix of Course BH-PBI -AECC-103

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI -AECC-103) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-AECC-103

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-AECC-103.1	3	3	3	2	2	3	3	3
BH-PBI-AECC-103.2	3	3	3	2	2	3	3	3
BH-PBI-AECC-103.3	3	3	3	2	2	3	3	3
BH-PBI-AECC-103.4	3	3	3	2	2	3	3	3
Average	3	3	3	2	2	3	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-AECC-103) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-Pbi -AECC-103

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-AECC-103.1	3	3	3	3
BH-PBI-AECC-103.2	3	3	3	3
BH-PBI-AECC-103.3	3	3	3	3
BH-PBI-AECC-103.4	3	3	3	3
Average	3	3	3	3

Semester : I
BH-PBI-GE-104

ਪੰਜਾਬੀ ਸਫ਼ਰਨਾਮਾ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ
(Punjabi Safarnama Ate Viharak Punjabi)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਸਫ਼ਰਨਾਮਾ ਅਤੇ ਪੰਜਾਬੀ ਸਫ਼ਰਨਾਮਾ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਸਫ਼ਰਨਾਮੇ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਆਲੋਚਨਾਤਮਕ/ ਕਲਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਲੇਖਕ ਦੀ ਵਾਰਤਕ ਸ਼ੈਲੀ/ ਭਾਸ਼ਾ ਸ਼ੈਲੀ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਸਫ਼ਰਨਾਮਾਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਦੇ ਪੰਜ ਉਪ-ਭਾਗ ਹਨ। ਉਪ-ਭਾਗ ਪਹਿਲਾ ਵਿੱਚ ਨਾਂਵ, ਪੜਨਾਂਵ, ਉਪ-ਭਾਗ ਦੂਜਾ ਵਿੱਚ ਕਿਰਿਆ, ਉਪ-ਭਾਗ ਤੀਜਾ ਵਿੱਚ ਅਖਾਣ, ਉਪਭਾਗ ਚੌਥਾ ਵਿੱਚ ਮੁਹਾਵਰੇ ਅਤੇ ਉਪਭਾਗ ਪੰਜਵਾਂ ਵਿੱਚ ਸੰਖੇਪ ਰਚਨਾ ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਉਪ-ਭਾਗ ਛੇ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ ਸਾਹਿਤ ਰੂਪ ਸਫ਼ਰਨਾਮਾ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੇ ਅਧਿਐਲ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਪ੍ਰਤੀ ਵਿਸ਼ੇਸ਼ ਸਮਝ ਪੈਦਾ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-GE-104.1 ਸਫ਼ਰਨਾਮਾ ਸਬੰਧੀ ਸਿਧਾਂਤਕ ਅਤੇ ਵਿਹਾਰਕ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।

BH-PBI-GE-104.2 ਪੰਜਾਬੀ ਸਫ਼ਰਨਾਮਾ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸਕ ਵਿਕਾਸ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।

BH-PBI-GE-104.3 ਕੁਝ ਵਿਸ਼ੇਸ਼ ਸਫ਼ਰਨਾਮਾ ਲੇਖਕਾਂ ਦੇ ਸਫ਼ਰਨਾਮਿਆਂ ਦੀ ਪੜ੍ਹਤ ਦੁਆਰਾ ਵਿਸ਼ੇਸ਼ ਦੇਸ਼ਾਂ ਦੇ ਸਮਾਜ-ਸਭਿਆਚਾਰ ਅਤੇ ਇਤਿਹਾਸ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।

BH-PBI-GE-104.4 ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੀ ਪੜ੍ਹਾਈ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਸੰਰਚਨਾ ਅਤੇ ਵਰਤੋਂ ਵਿਹਾਰ ਬਾਰੇ ਸਮਝ ਅਤੇ ਮੁਹਾਰਤ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਪੰਜਾਬੀ ਸਫ਼ਰਨਾਮਾ : ਸਿਧਾਂਤ, ਇਤਿਹਾਸ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ

1.1 ਸਫ਼ਰਨਾਮਾ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

1.2 ਪੰਜਾਬੀ ਸਫ਼ਰਨਾਮਾ : ਆਰੰਭ ਅਤੇ ਵਿਕਾਸ

1.3 ਪੰਜਾਬੀ ਸਫ਼ਰਨਾਮਾ : ਪ੍ਰਮੁੱਖ ਪ੍ਰਵਿਰਤੀਆਂ

ਯੂਨਿਟ ਦੂਜਾ

2. ਜਿੰਦਰ, ***ਚੱਲ ਜਿੰਦਰ ਇਸਲਾਮਾਬਾਦ ਚੱਲੀਏ***, ਸੰਗਮ ਪਬਲੀਕੇਸ਼ਨ, ਸਮਾਣਾ, 2016

2.1 ਵਿਸ਼ਾ ਵਸਤੂ

2.2 ਵਾਰਤਕ ਸ਼ੈਲੀ

2.3 ਭਾਸ਼ਾ

2.4 ਪਾਠਗਤ ਅਧਿਐਨ

ਯੂਨਿਟ ਤੀਜਾ

3. ਵਿਹਾਰਕ ਪੰਜਾਬੀ

3.1 ਨਾਂਵ ਅਤੇ ਪੜਨਾਂਵ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਕਿਸਮਾਂ

3.2 ਕਿਰਿਆ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਕਿਸਮਾਂ

3.3 ਅਖਾਣ : ਅਰਥ, ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਯੋਗ, ਮਹੱਤਵ ਅਤੇ ਪੰਜਾਬੀ ਅਖਾਣ, ਅਖਾਣ ਅਤੇ ਮੁਹਾਵਰੇ ਵਿੱਚ ਅੰਤਰ

3.4 ਮੁਹਾਵਰਾ : ਅਰਥ, ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਯੋਗ, ਮਹੱਤਵ ਅਤੇ ਪੰਜਾਬੀ ਮੁਹਾਵਰੇ, ਅਖਾਣਾਂ ਅਤੇ ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਰਤੋਂ ਪ੍ਰਤੀ ਘੱਟ ਰਹੇ ਰੁਝਾਨ ਦੇ ਕਾਰਨ ਅਤੇ ਸੁਝਾਅ

3.5 ਸੰਖੇਪ ਰਚਨਾ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਬੂਟਾ ਸਿੰਘ ਬਰਾੜ, ਪੰਜਾਬੀ ਵਿਆਕਰਨ : ਸਿਧਾਂਤ ਅਤੇ ਵਿਹਾਰ, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2●12
2. ਰਛਪਾਲ ਕੌਰ, **ਪੰਜਾਬੀ ਸਫ਼ਰਨਾਮਾ : ਸਰੂਪ ਅਤੇ ਸੰਭਾਵਨਾਵਾਂ,** ਰਾਜੇਸ਼ ਪ੍ਰਕਾਸ਼ਨ, ਨਾਭਾ, 1991
3. ਰਛਪਾਲ ਕੌਰ, **ਪੰਜਾਬੀ ਸਫ਼ਰਨਾਮਾ : ਸਰੂਪ ਸਿਧਾਂਤ ਅਤੇ ਵਿਕਾਸ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1997
4. ਰਾਜਿੰਦਰ ਸਿੰਘ (ਸੰਪਾ.), **ਯਾਤਰੀ ਅਤੇ ਸਫ਼ਰਨਾਮੇ,** ਨੈਸ਼ਨਲ ਬੁੱਕ ਟ੍ਰੱਸਟ, ਦਿੱਲੀ, 1980

Mapping Matrix of Course BH-PBI-GE-104

Mapping: Mapping is a process of representing the correlation between COs and POs, Cos and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-GE-104) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-GE-104

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-GE-104.1	3	2	3	2	2	3	3	3
BH-PBI-GE-104.2	3	3	3	2	2	3	3	3
BH-PBI-GE-104.3	3	3	3	2	2	3	3	3
BH-PBI-GE-104.4	3	3	3	2	2	3	3	3
Average	3	2.75	3	2	2	3	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-GE-104) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-GE-104

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-GE-104.1	3	3	3	2
BH-PBI-GE-104.2	3	3	3	3
BH-PBI-GE-104.3	3	3	3	3
BH-PBI-GE-104.4	3	3	3	3
Average	3	3	3	2.75

Semester : II
BH-PBI-CC-201

ਪੰਜਾਬੀ ਸੂਫ਼ੀ ਕਾਵਿ
(Punjabi Sufi Kav)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਸੂਫ਼ੀ ਕਾਵਿ ਅਤੇ ਪੰਜਾਬੀ ਸੂਫ਼ੀ ਕਾਵਿ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਪੁਸਤਕ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਕਲਾਤਮਕ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਪੁਸਤਕ ਵਿੱਚੋਂ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਪੁਸਤਕ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਕਲਾਤਮਕ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਪੁਸਤਕ ਵਿੱਚੋਂ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਸੂਫ਼ੀ ਸਾਹਿਤ ਅਤੇ ਵਿਚਾਰਧਾਰਾ ਦੇ ਹਵਾਲੇ ਨਾਲ ਮੱਧਕਾਲ ਵਿੱਚ ਪੈਦਾ ਹੋਏ ਸੂਫ਼ੀ ਕਾਵਿ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-CC-201.1	ਵਿਦਿਆਰਥੀ ਸੂਫ਼ੀ ਮੱਤ/ ਸੂਫ਼ੀਵਾਦ ਦੇ ਵਿਚਾਰਧਾਰਕ ਆਧਾਰ ਦੀ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਕਰ ਸਕਣਗੇ।
BH-PBI-CC-201.2	ਸੂਫ਼ੀਵਾਦ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਵਿੱਚ ਪੰਜਾਬੀ ਸੂਫ਼ੀ ਕਾਵਿ ਪ੍ਰਤੀ ਸਮਝ ਬਣੇਗੀ।
BH-PBI-CC-201.3	ਵਿਦਿਆਰਥੀ ਸੂਫ਼ੀਵਾਦ ਦੇ ਸਾਹਿਤਕ ਅਤੇ ਸਮਾਜਿਕ-ਸਭਿਆਚਾਰਕ ਮਹੱਤਵ ਨੂੰ ਸਮਕਾਲੀ ਪ੍ਰਸੰਗ ਵਿੱਚ ਸਮਝਣ ਦੇ ਯੋਗ ਹੋਣਗੇ।
BH-PBI-CC-201.4	ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਸੂਫ਼ੀ ਕਾਵਿ ਦੇ ਵਿਸ਼ੇਗਤ ਅਤੇ ਕਲਾਤਮਕ ਸਰੋਕਾਰਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਸੂਫ਼ੀ ਕਾਵਿ : ਸਿਧਾਂਤ, ਇਤਿਹਾਸ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ
1.1 ਸੂਫ਼ੀ ਸੰਕਲਪ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਸਰੂਪ
1.2 ਸੂਫ਼ੀ ਮੱਤ ਸਿਲਸਿਲੇ
1.3 ਸੂਫ਼ੀ ਕਾਵਿ ਦੇ ਪੜਾਅ
1.4 ਸੂਫ਼ੀ ਮੱਤ ਦੇ ਮੂਲ ਸੰਕਲਪ
1.5 ਸੂਫ਼ੀ ਕਾਵਿ : ਮੁੱਖ ਰੂਪਾਕਾਰ

ਯੂਨਿਟ ਦੂਜਾ

2. ਗੁਰਬਚਨ ਸਿੰਘ ਤਾਲਿਬ (ਸੰਪਾ.), ***ਬਾਬਾ ਫ਼ਰੀਦ***, ਨੈਸ਼ਨਲ ਬੁੱਕ ਟਰੱਸਟ ਇੰਡੀਆ, ਦਿੱਲੀ, 2011
2.1 ਵਿਚਾਰਧਾਰਾ
2.2 ਕਾਵਿ ਕਲਾ ਅਤੇ ਪ੍ਰਗੀਤਕਤਾ
2.3 ਭਾਸ਼ਾ ਸ਼ੈਲੀ
2.4 ਮੌਤ ਦਾ ਸੰਕਲਪ
2.5 ਦਾਰਸ਼ਨਿਕ ਪੱਖ
2.6 ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ

ਯੂਨਿਟ ਤੀਜਾ

3. ਪਿਆਰਾ ਸਿੰਘ ਪਦਮ (ਸੰਪਾ.), ***ਬਾਬਾ ਵਜੀਦ***, ਸਰਦਾਰ ਸਾਹਿਤ ਭਵਨ, ਪਟਿਆਲਾ, 1970
3.1 ਵਿਸ਼ਾ
3.2 ਸਮਾਜਿਕ ਸਰੋਕਾਰ
3.3 ਰਹੱਸਵਾਦ
3.4 ਵਿਚਾਰਧਾਰਾ
3.5 ਕਾਵਿ ਅੰਦਾਜ਼/ ਕਾਵਿ ਕਲਾ
3.6 ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਅਨਵਰ ਚਿਰਾਗ, **ਇਸਲਾਮੀ ਚਿੰਤਨ ਅਤੇ ਪੰਜਾਬੀ ਸੂਫ਼ੀ ਕਵਿਤਾ,** ਨੈਸ਼ਨਲ ਬੁੱਕ ਸ਼ਾਪ, ਦਿੱਲੀ
2. ਅਮਰਜੀਤ ਸਿੰਘ ਕਾਂਗ, **ਮੱਧਕਾਲੀ ਸਾਹਿਤ ਅਧਿਐਨ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ
3. ਗੁਰਚਰਨ ਸਿੰਘ, ਇਸਲਾਮ ਅਤੇ ਸੂਫ਼ੀਮੱਤ, ਵਾਰਿਸ ਸ਼ਾਹ ਫ਼ਾਊਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ
4. ਗੁਰਦੇਵ ਸਿੰਘ, **ਪੰਜਾਬੀ ਸੂਫ਼ੀ ਕਾਵਿ ਦਾ ਇਤਿਹਾਸ,** ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 2005
5. ਜਗਜੀਤ ਸਿੰਘ, **ਸ਼ੇਖ ਫ਼ਰੀਦ ਦਾ ਕਾਵਿ ਪ੍ਰਵਚਨ,** ਵਾਰਿਸ ਸ਼ਾਹ ਫ਼ਾਊਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ, 2005
6. ਜੀਤ ਸਿੰਘ ਸੀਤਲ, **ਖੋਜ ਪਤ੍ਰਿਕਾ (ਬਾਬਾ ਫਰੀਦ ਵਿਸ਼ੇਸ਼ ਅੰਕ),** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1997
7. ਦਵਿੰਦਰ ਸਿੰਘ, **ਪੰਜਾਬੀ ਸੂਫ਼ੀ ਸਾਹਿਤ ਦਾ ਅਧਿਐਨ,** ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ, 1986
8. ਰਤਨ ਸਿੰਘ ਜੱਗੀ (ਸੰਪਾ.), **ਖੋਜ ਪਤ੍ਰਿਕਾ (ਸੂਫ਼ੀ ਕਾਵਿ ਵਿਸ਼ੇਸ਼ ਅੰਕ) ਅੰਕ 33,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1989
9. ਲਾਜਵੰਤੀ ਰਾਮਾ ਕ੍ਰਿਸ਼ਨਾ, **ਪੰਜਾਬੀ ਸੂਫ਼ੀ ਪੋਇਟਸ,** ਆਸ਼ਾਜਨਕ ਪਬਲੀਕੇਸ਼ਨ, ਦਿੱਲੀ, 1973

Mapping Matrix of Course BH-PBI-CC-201

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-CC-201) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-CC-201

CO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**
BH-PBI-CC-201.1	**3**	**2**	**3**	**2**	**3**	**2**	**3**	**3**
BH-PBI-CC-201.2	**3**	**3**	**3**	**3**	**3**	**2**	**3**	**3**
BH-PBI-CC-201.3	**3**	**2**	**3**	**2**	**3**	**2**	**3**	**3**
BH-PBI-CC-201.4	**3**	**2**	**3**	**2**	**3**	**3**	**3**	**3**
Average	**3**	**2.25**	**3**	**2.25**	**3**	**2.25**	**3**	**3**

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-CC-201) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-CC-201

CO	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**
BH-PBI-CC-201.1	**3**	**3**	**2**	**3**
BH-PBI-CC-201.2	**3**	**3**	**2**	**3**
BH-PBI-CC-201.3	**3**	**3**	**2**	**3**
BH-PBI-CC-201.4	**3**	**3**	**3**	**3**
Average	**3**	**3**	**2.25**	**3**

Semester : II
BH-PBI-CC-202

ਨਵੀਨ ਪੰਜਾਬੀ ਵਾਰਤਕ
(Nveen Punjabi Vartak)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਵਾਰਤਕ ਅਤੇ ਪੰਜਾਬੀ ਵਾਰਤਕ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਨਿਬੰਧ ਪੁਸਤਕ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਸਰੋਕਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਪੁਸਤਕ ਦੀ ਵਾਰਤਕ ਸ਼ੈਲੀ/ ਭਾਸ਼ਾ ਸ਼ੈਲੀ/ ਕਲਾਤਮਕਤਾ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਵਾਰਤਕਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਵਾਰਤਕ ਪੁਸਤਕ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਸਰੋਕਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਪੁਸਤਕ ਦੀ ਵਾਰਤਕ ਸ਼ੈਲੀ/ ਭਾਸ਼ਾ ਸ਼ੈਲੀ/ ਕਲਾਤਮਕਤਾ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਵਾਰਤਕਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ ਅਤੇ ਇਸਦੇ ਰੂਪ ਨਿਬੰਧ ਅਤੇ ਯਾਦਾਂ ਬਾਰੇ ਵਿਸ਼ੇਸ਼ ਜਾਣਕਾਰੀ ਪ੍ਰਦਾਨ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-CC-202.1	ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ ਦੇ ਰੂਪ ਨਿਬੰਧ ਅਤੇ ਯਾਦਾਂ ਸਬੰਧੀ ਸਿਧਾਂਤਕ ਸਮਝ ਪੈਦਾ ਹੋਵੇਗੀ।
BH-PBI-CC-202.2	ਪੰਜਾਬੀ ਨਿਬੰਧ ਅਤੇ ਯਾਦਾਂ ਦੇ ਇਤਿਹਾਸਕ ਵਿਕਾਸ ਅਤੇ ਇਸਦੇ ਪ੍ਰਮੁੱਖ ਝੁਕਾਵਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।
BH-PBI-CC-202.3	ਕੁਝ ਵਿਸ਼ੇਸ਼ ਲੇਖਕਾਂ ਦੀਆਂ ਪੁਸਤਕਾਂ ਦੀ ਪੜ੍ਹਤ ਦੁਆਰਾ ਵਾਰਤਕ ਦੇ ਵਿਹਾਰਕ ਅਧਿਐਨ ਦੀ ਯੋਗਤਾ ਹਾਸਲ ਹੋਵੇਗੀ।

BH-PBI-CC-202.4 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਾਰਤਕ ਦੇ ਵਿਸ਼ੇਗਤ ਅਤੇ ਕਲਾਤਮਕ ਸਰੋਕਾਰਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਵਾਰਤਕ : ਸਿਧਾਂਤ, ਇਤਿਹਾਸ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ
1.1 ਵਾਰਤਕ : ਪਰਿਭਾਸ਼ਾ ਤੇ ਰੂਪਾਕਾਰਕ ਵਿਲੱਖਣਤਾ
1.2 ਆਧੁਨਿਕ ਵਾਰਤਕ : ਪ੍ਰਮੁੱਖ ਰੂਪਾਕਾਰ
1.3 ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ : ਆਰੰਭ ਵਿਕਾਸ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ
1.4 ਪੰਜਾਬੀ ਨਿਬੰਧ : ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ
1.5 ਪੰਜਾਬੀ ਵਿੱਚ ਲਿਖਿਆ ਗਿਆ ਯਾਦਾਂ ਸਾਹਿਤ

ਯੂਨਿਟ ਦੂਜਾ

2. ਸੁਰਿੰਦਰ ਅਤੈ ਸਿੰਘ, ***ਮਨ ਵਣਜਾਰਾ***, ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2017
2.1 ਨਿਬੰਧ ਸਾਹਿਤ ਰੂਪਾਕਾਰ
2.2 ਵਿਸ਼ੇਗਤ ਸਰੋਕਾਰ
2.3 ਭਾਸ਼ਾਈ ਜੁਗਤਾਂ
2.4 ਵਾਰਤਕ ਸ਼ੈਲੀ
2.5 ਆਲੋਚਨਾਤਮਕ ਮੁੱਲਾਂਕਣ

ਯੂਨਿਟ ਤੀਜਾ

3. ਸੁਕੀਰਤ, ***ਬਾਤ ਇੱਕ ਬੀਤੇ ਦੀ***, ਪੀਪਲਜ਼ ਫ਼ੋਰਮ ਬਰਗਾੜੀ, 2015 (ਤੀਜਾ ਐਡੀਸ਼ਨ)
3.1 ਯਾਦਾਂ ਸਾਹਿਤ ਰੂਪਾਕਾਰ
3.2 ਵਿਸ਼ਾ
3.3 ਵਾਰਤਕ ਸ਼ੈਲੀ
3.4 ਭਾਸ਼ਾਈ ਜੁਗਤਾਂ
3.5 ਆਲੋਚਨਾਤਮਕ ਮੁੱਲਾਂਕਣ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਕੁਲਵੰਤ ਸਿੰਘ, **ਪੰਜਾਬੀ ਵਾਰਤਕ : ਸੰਚਾਰ ਤੇ ਵਿਹਾਰ,** ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ
2. ਧਰਮਪਾਲ ਸਿੰਗਲ, **ਵਾਰਤਕ ਸ਼ੈਲੀ,** ਭਾਸ਼ਾ ਵਿਭਾਗ ਪੰਜਾਬ, ਪਟਿਆਲਾ
3. ਬਲਵੀਰ ਸਿੰਘ ਦਿਲ, **ਪੰਜਾਬੀ ਨਿਬੰਧ : ਸਰੂਪ ਸਿਧਾਂਤ ਤੇ ਵਿਕਾਸ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1991

Mapping Matrix of Course BH-PBI-CC-202

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-CC-202) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-CC-202

CO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**
BH-PBI-CC-202.1	**3**	**2**	**3**	**2**	**3**	**2**	**3**	**3**
BH-PBI-CC-202.2	**3**	**3**	**3**	**3**	**3**	**2**	**3**	**3**
BH-PBI-CC-202.3	**3**	**2**	**3**	**2**	**3**	**2**	**3**	**3**
BH-PBI-CC-202.4	**3**	**2**	**3**	**2**	**3**	**3**	**3**	**3**
Average	**3**	**2.25**	**3**	**2.25**	**3**	**2.25**	**3**	**3**

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-CC-202) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-CC-202

CO	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**
BH-PBI-CC-202.1	**3**	**3**	**2**	**3**
BH-PBI-CC-202.2	**3**	**3**	**2**	**3**
BH-PBI-CC-202.3	**3**	**3**	**2**	**3**
BH-PBI-CC-202.4	**3**	**3**	**3**	**3**
Average	**3**	**3**	**2.25**	**3**

Semester : II
BH-PBI-GE-203

ਪੰਜਾਬੀ ਮਹਾਂਕਾਵਿ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ
(Punjabi Mahakaav Ate Viharak Punjabi)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਮਹਾਂਕਾਵਿ ਅਤੇ ਪੰਜਾਬੀ ਮਹਾਂਕਾਵਿ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਮਹਾਂਕਾਵਿ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਮਹਾਂਕਾਵਿ ਦੇ ਕਲਾਤਮਕ ਅਧਿਐਨ/ ਮਹਾਂਕਾਵਿਕ ਜੁਗਤਾਂ/ ਭਾਸ਼ਾ ਸ਼ੈਲੀ ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਮਹਾਂਕਾਵਿ ਲੇਖਕ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਦੇ ਪੰਜ ਉਪ-ਭਾਗ ਹਨ। ਉਪ-ਭਾਗ ਪਹਿਲਾ ਵਿੱਚ ਬਹੁਤੇ ਸ਼ਬਦਾਂ ਦੀ ਥਾਂ ਇੱਕ ਸ਼ਬਦ (ਛੇ), ਭਾਗ ਦੂਜਾ ਵਿੱਚ ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨਿਯਮ ਅਤੇ ਸ਼ੁੱਧ-ਅਸ਼ੁੱਧ ਸ਼ਬਦ (ਛੇ), ਉਪ-ਭਾਗ ਤੀਜਾ ਵਿੱਚ ਅਗੇਤਰ-ਪਿਛੇਤਰ (ਛੇ) ਅਤੇ ਉਪਭਾਗ ਚੌਥਾ ਵਿਰੋਧੀ ਸ਼ਬਦ (ਛੇ) ਅਤੇ ਉਪ-ਭਾਗ ਪੰਜਵਾਂ ਵਿੱਚ ਛੰਦਾਂ ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਉਪ-ਭਾਗ ਛੇ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਮਹਾਂਕਾਵਿ ਅਤੇ ਪੰਜਾਬੀ ਮਹਾਂਕਾਵਿ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਵਿਹਾਰਕ ਪੱਖ ਬਾਰੇ ਸਮਝ ਪੈਦਾ ਕਰਨਾ
- ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੇ ਅਧਿਐਨ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਪ੍ਰਤੀ ਵਿਸ਼ੇਸ਼ ਸਮਝ ਪੈਦਾ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-GE-203.1 ਮਹਾਂਕਾਵਿ ਸਬੰਧੀ ਸਿਧਾਂਤਕ ਅਤੇ ਵਿਹਾਰਕ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।

BH-PBI-GE-203.2 ਪੰਜਾਬੀ ਮਹਾਂਕਾਵਿ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸਕ ਵਿਕਾਸ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।

BH-PBI-GE-203.3 ਕੁਝ ਵਿਸ਼ੇਸ਼ ਮਹਾਂਕਾਵਿ ਲੇਖਕਾਂ ਦੇ ਮਹਾਂਕਾਵਿ ਦੀ ਪੜ੍ਹਤ ਦੁਆਰਾ ਮਹਾਂਕਾਵਿ ਦੇ ਵਿਹਾਰਕ ਅਧਿਐਨ ਦੀ ਯੋਗਤਾ ਹਾਸਲ ਹੋਵੇਗੀ।

BH-PBI-GE-203.4 ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੀ ਪੜ੍ਹਾਈ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਸੰਰਚਨਾ ਅਤੇ ਵਰਤੋਂ ਵਿਹਾਰ ਬਾਰੇ ਸਮਝ ਅਤੇ ਮੁਹਾਰਤ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਮਹਾਂਕਾਵਿ ਅਤੇ ਪੰਜਾਬੀ ਮਹਾਂਕਾਵਿ : ਸਿਧਾਂਤ, ਇਤਿਹਾਸ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ

1.1 ਮਹਾਂਕਾਵਿ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

1.2 ਪੰਜਾਬੀ ਮਹਾਂਕਾਵਿ : ਆਰੰਭ ਅਤੇ ਵਿਕਾਸ

1.3 ਪੰਜਾਬੀ ਮਹਾਂਕਾਵਿ : ਪ੍ਰਮੁੱਖ ਪ੍ਰਵਿਰਤੀਆਂ

ਯੂਨਿਟ ਦੂਜਾ

2. ਪ੍ਰੋ. ਮੋਹਨ ਸਿੰਘ, ***ਨਨਕਾਇਣ***, ਪਬਲੀਕੇਸ਼ਨ ਬਿਉਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2019

2.1 ਨਾਨਕ ਬਿੰਬ

2.2 ਕਲਾ ਪੱਖ/ ਵਿਧੀ ਅਤੇ ਤਕਨੀਕ

2.3 ਮਹਾਂਕਾਵਿ ਦੇ ਤੌਰ 'ਤੇ ਪਰਖ

2.4 ਕਾਵਿ ਜੁਗਤਾਂ

ਯੂਨਿਟ ਤੀਜਾ

3. ਵਿਹਾਰਕ ਪੰਜਾਬੀ

3.1 ਬਹੁਤੇ ਸ਼ਬਦਾਂ ਦੀ ਥਾਂ ਇੱਕ ਸ਼ਬਦ

3.2 ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨੇਮ ਅਤੇ ਸ਼ੁੱਧ ਅਸ਼ੁੱਧ ਸ਼ਬਦ ਬੋਧ

3.3 ਅਗੇਤਰ-ਪਿਛੇਤਰ

3.4 ਵਿਰੋਧੀ ਸ਼ਬਦ

3.5 ਛੰਦ : ਅਰਥ, ਪਰਿਭਾਸ਼ਾ, ਤੱਤ ਅਤੇ ਕਿਸਮਾਂ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਅਵਤਾਰ ਸਿੰਘ, ***ਪੰਜਾਬੀ ਮਹਾਂਕਾਵਿ ਦਾ ਵਿਕਾਸ***, ਨੈਸ਼ਨਲ ਬੁੱਕ ਸ਼ਾਪ, ਦਿੱਲੀ
2. ਮਨਜੀਤ ਸਿੰਘ, ਪੰਜਾਬੀ ਸਮੀਖਿਆ ਸੰਸਾਰ, "ਨਨਕਾਇਣ : ਮਹਾਂ ਕਾਵਿ ਜਨ ਕਾਵਿ ਸਾਖੀ", ਪੰਜਾਬੀ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ (ਪੰਨੇ 101-111)
3. ਪ੍ਰੀਤਮ ਸਿੰਘ ਸੈਨੀ, ***ਨਨਕਾਇਣ : ਇੱਕ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ***, ਲਾਹੌਰ ਬੁੱਕ ਸ਼ਾਪ, ਲੁਧਿਆਣਾ
4. ਬੂਟਾ ਸਿੰਘ ਬਰਾੜ, ***ਪੰਜਾਬੀ ਵਿਆਕਰਨ : ਸਿਧਾਂਤ ਅਤੇ ਵਿਹਾਰ***, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2012

Mapping Matrix of Course BH-PBI-GE-203

Mapping: Mapping is a process of representing the correlation between COs and POs, Cos and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-GE-203) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-GE-203

CO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**
BH-PBI-GE-203.1	**3**	**3**	**2**	**2**	**2**	**2**	**3**	**3**
BH-PBI-GE-203.2	**3**	**3**	**3**	**2**	**2**	**3**	**3**	**3**
BH-PBI-GE-203.3	**3**	**3**	**3**	**2**	**2**	**3**	**3**	**3**
BH-PBI-GE-203.4	**3**	**3**	**3**	**2**	**2**	**2**	**3**	**3**
Average	**3**	**3**	**2.75**	**2**	**2**	**2.5**	**3**	**3**

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-GE-203) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-GE-203

CO	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**
BH-PBI-GE-203.1	**3**	**2**	**3**	**3**
BH-PBI-GE-203.2	**3**	**3**	**3**	**3**
BH-PBI-GE-203.3	**3**	**3**	**3**	**3**
BH-PBI-GE-203.4	**3**	**3**	**3**	**3**
Average	**3**	**2.75**	**3**	**3**

Semester : III
BH-PBI-CC-301

ਪੰਜਾਬੀ ਲੋਕਧਾਰਾ ਅਤੇ ਸਭਿਆਚਾਰ
(Punjabi Lokdhara Ate Sabhyachar)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਲੋਕਧਾਰਾ ਅਤੇ ਸਭਿਆਚਾਰ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਪੰਜਾਬ ਦੀ ਲੋਕਧਾਰਾ ਪੁਸਤਕ ਵਿੱਚੋਂ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦੇ ਵਿਹਾਰਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਲੋਕਧਾਰਾ, ਸਭਿਆਚਾਰ ਅਤੇ ਲੋਕ ਪ੍ਰੰਪਰਾ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-CC-301.1 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਸਭਿਆਚਾਰ ਅਤੇ ਲੋਕਧਾਰਾ ਦੇ ਸਿਧਾਂਤਕ ਪਹਿਲੂਆਂ ਬਾਰੇ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ।

BH-PBI-CC-301.2 ਵਿਦਿਆਰਥੀ ਵਿੱਚ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦੇ ਵਿਸ਼ੇਸ਼ ਪਛਾਣ ਚਿੰਨ੍ਹਾਂ ਰਾਹੀਂ ਪੰਜਾਬੀ ਮਾਨਸਿਕਤਾ ਅਤੇ ਪੰਜਾਬੀਅਤ ਨੂੰ ਸਮਝਣ ਦੀ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।

BH-PBI-CC-301.3 ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦੇ ਵਿਲੱਖਣ ਸਰੂਪ ਦੇ ਨਾਲ-ਨਾਲ ਵਰਤਮਾਨ ਦੌਰ ਵਿੱਚ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਨੂੰ ਦਰਪੇਸ਼ ਚੁਣੌਤੀਆਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

BH-PBI-CC-301.4 ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਲੋਕ ਪ੍ਰੰਪਰਾ ਦੀ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਕਰਕੇ ਪੰਜਾਬੀ ਜਨ-ਜੀਵਨ ਪ੍ਰਤੀ ਆਪਣੀ ਸਮਝ ਪੈਦਾ ਕਰ ਸਕਣ ਦੇ ਯੋਗ ਹੋਣਗੇ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਲੋਕਧਾਰਾ ਅਤੇ ਸਭਿਆਚਾਰ : ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ

1.1 ਲੋਕਧਾਰਾ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

1.2 ਲੋਕਧਾਰਾ : ਪ੍ਰਮੁੱਖ ਤੱਤ

1.3 ਲੋਕਧਾਰਾ ਦਾ ਖੇਤਰ

1.4 ਸਭਿਆਚਾਰ : ਸਿਧਾਂਤਕ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ

1.5 ਸਭਿਆਚਾਰ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

1.6 ਸਭਿਅਤਾ, ਸਭਿਆਚਾਰ ਅਤੇ ਲੋਕਧਾਰਾ : ਅੰਤਰ ਨਿਖੇੜ

ਯੂਨਿਟ ਦੂਜਾ

2. ਸੋਹਿੰਦਰ ਸਿੰਘ ਵਣਜਾਰ ਬੇਦੀ, ***ਪੰਜਾਬ ਦੀ ਲੋਕਧਾਰਾ***, ਨੈਸ਼ਨਲ ਬੁੱਕ ਟਰੱਸਟ, ਦਿੱਲੀ, 2011

2.1 ਪੰਜਾਬ ਦੇ ਲੋਕ ਨਾਚ

2.2 ਮੇਲੇ ਤੇ ਤਿਉਹਾਰ

2.3 ਜਾਦੂ ਟੂਣੇ ਤੇ ਧਰਮ

2.4 ਲੋਕਾਚਾਰ ਤੇ ਰੀਤੀ ਰਿਵਾਜ

2.5 ਪੰਜਾਬੀ ਲੋਕਧਾਰਾ ਅਧਿਐਨ ਦੀਆਂ ਸਮੱਸਿਆਵਾਂ

ਯੂਨਿਟ ਤੀਜਾ

3. ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ : ਵਿਹਾਰਕ ਪਹਿਲੂ

3.1 ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ : ਮੂਲ ਪਛਾਣ ਚਿੰਨ੍ਹ

3.2 ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ : ਭੂਗੋਲਿਕ ਪਹਿਲੂ

3.3 ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਆਰਥਿਕ ਪਰਿਪੇਖ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਗੁਰਬਖਸ਼ ਸਿੰਘ ਫ਼ਰੈਂਕ, **ਸਭਿਆਚਾਰ ਅਤੇ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ**, ਪੰਜਾਬੀ ਰਾਈਟਰਜ਼ ਕੋਆਪਰੇਟਿਵ ਸੁਸਾਇਟੀ, ਲੁਧਿਆਣਾ
2. ਜਸਵਿੰਦਰ ਸਿੰਘ, **ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ : ਪਛਾਣ ਚਿੰਨ੍ਹ,** ਗਰੇਸੀਅਸ ਬੁੱਕਸ, ਪਟਿਆਲਾ, 2012
3. ਜੀਤ ਸਿੰਘ ਜੋਸ਼ੀ, **ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਬਾਰੇ,** ਵਾਰਿਸ ਸ਼ਾਹ ਫਾਊਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ, 1999
4. ਟੀ. ਆਰ. ਵਿਨੋਦ, **ਸੰਸਕ੍ਰਿਤੀ : ਸਿਧਾਂਤ ਅਤੇ ਵਿਹਾਰ,** ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2004
5. ਭੁਪਿੰਦਰ ਸਿੰਘ ਖਹਿਰਾ, **ਲੋਕਧਾਰਾ ਭਾਸ਼ਾ ਅਤੇ ਸਭਿਆਚਾਰ,** ਪੈਪਸੂ ਬੁੱਕ ਡਿਪੂ, ਪਟਿਆਲਾ, 1998
6. ਸੋਹਿੰਦਰ ਸਿੰਘ ਬੇਦੀ, **ਪੰਜਾਬ ਦੀ ਲੋਕਧਾਰਾ,** ਨੈਸ਼ਨਲ ਬੁੱਕ ਟ੍ਰੱਸਟ, ਇੰਡੀਆ, 1999
7. ਕਰਨੈਲ ਸਿੰਘ ਥਿੰਦ, **ਲੋਕਯਾਨ ਅਧਿਐਨ,** ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ
8. ਕਰਨੈਲ ਸਿੰਘ ਥਿੰਦ, **ਪੰਜਾਬ ਦਾ ਲੋਕ ਵਿਰਸਾ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1996
9. ਗੁਰਨਾਮ ਸਿੰਘ, **ਪੰਜਾਬ ਦੇ ਲੋਕ ਨਾਚ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1996
10. ਗੁਰਮੀਤ ਸਿੰਘ, **ਲੋਕਧਾਰਾ : ਪਰੰਪਰਾ ਤੇ ਆਧੁਨਿਕਤਾ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ
11. ਮਨਜੀਤ ਸਿੰਘ (ਸੰਪਾ.), **ਪੰਜਾਬੀ ਲੋਕ ਪਰੰਪਰਾ,** ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 1987

Mapping Matrix of Course BH-PBI-CC-301

Mapping: Mapping is a process of representing the correlation between COs and POs, Cos and PSOs in the scale of 1 to 3 as follows (Table 1):

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2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-CC-301) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-CC-301

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-CC-301.1	3	2	3	2	2	3	3	3
BH-PBI-CC-301.2	3	2	3	3	3	3	3	3
BH-PBI-CC-301.3	3	3	3	2	2	2	2	3
BH-PBI-CC-301.4	3	3	3	3	3	3	3	3
Average	3	2.5	3	2.5	2.5	2.75	2.75	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-CC-301) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-CC-301

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-CC-301.1	3	3	3	3
BH-PBI-CC-301.2	3	3	3	3
BH-PBI-CC-301.3	3	3	3	3
BH-PBI-CC-301.4	3	3	3	3
Average	3	3	3	3

Semester : III
BH-PBI-CC-302

ਪੰਜਾਬੀ ਨਾਵਲ
(Punjabi Naval)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਨਾਵਲ ਅਤੇ ਪੰਜਾਬੀ ਨਾਵਲ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਾਵਲ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਕਲਾਤਮਕ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਨਾਵਲ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਨਾਵਲਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਾਵਲ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਕਲਾਤਮਕ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਨਾਵਲ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਨਾਵਲਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਬਿਰਤਾਂਤ ਅਤੇ ਬਿਰਤਾਂਤ ਸ਼ਾਸਤਰ ਦੀ ਜਾਣਕਾਰੀ ਪ੍ਰਦਾਨ ਕਰਦੇ ਹੋਏ ਨਾਵਲ ਅਤੇ ਬਿਰਤਾਂਤ ਦੀ ਆਪਸੀ ਸਬੰਧਾਤਮਕਤਾ ਤੋਂ ਵਾਕਿਫ਼ ਕਰਾਉਣਾ।
- ਪੰਜਾਬੀ ਨਾਵਲ ਦੀ ਪੜ੍ਹਤ ਰਾਹੀਂ ਨਾਵਲ ਦੀ ਵਿਸ਼ੇਸ਼ ਸੂਝ ਪੈਦਾ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-CC-302.1 ਵਿਦਿਆਰਥੀ ਨਾਵਲ ਦੇ ਸਿਧਾਂਤਕ ਚੌਖਟੇ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

BH-PBI-CC-302.2 ਪੰਜਾਬੀ ਨਾਵਲ ਦੇ ਵਿਧਾਗਤ ਸਰੂਪ, ਇਤਿਹਾਸਕ ਵਿਕਾਸ ਅਤੇ ਪ੍ਰਮੁੱਖ ਝੁਕਾਵਾਂ/ਪ੍ਰਵਿਰਤੀਆਂ ਦੀ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।

BH-PBI-CC-302.3 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਨਾਵਲ ਦੇ ਵਿਸ਼ੇਗਤ ਅਤੇ ਕਲਾਤਮਕ ਸਰੋਕਾਰਾਂ ਦਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ।

BH-PBI-CC-302.4 ਕੁਝ ਵਿਸ਼ੇਸ਼ ਨਾਵਲਕਾਰਾਂ ਦੇ ਨਾਵਲਾਂ ਦੀ ਪੜ੍ਹਤ ਦੁਆਰਾ ਨਾਵਲੀ ਟੈਕਸਟ ਦੇ ਵਿਹਾਰਕ ਅਧਿਐਨ ਦੀ ਯੋਗਤਾ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਪੰਜਾਬੀ ਨਾਵਲ : ਸਿਧਾਂਤ, ਇਤਿਹਾਸ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ

1.1 ਨਾਵਲ: ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਸਰੂਪ

1.2 ਨਾਵਲ ਦੇ ਸੰਰਚਨਾਤਮਕ ਤੱਤ

1.3 ਪੰਜਾਬੀ ਨਾਵਲ ਦਾ ਨਿਕਾਸ ਅਤੇ ਵਿਕਾਸ

1.4 ਪੰਜਾਬੀ ਨਾਵਲ ਦੀਆਂ ਪ੍ਰਵਿਰਤੀਆਂ

ਯੂਨਿਟ ਦੂਜਾ

2. ਅਵਤਾਰ ਬਿਲਿੰਗ, ***ਖਾਲੀ ਖੂਹਾਂ ਦੀ ਕਥਾ***, ਯੂਨੀਸਟਾਰ ਪਬਲੀਕੇਸ਼ਨਜ਼, ਚੰਡੀਗੜ੍ਹ, 2015

2.1 ਵਿਸ਼ਾ ਪੱਖ

2.2 ਪੰਜਾਬੀ ਕਿਸਾਨੀ ਦੇ ਮਸਲੇ

2.3 ਗਲਪੀ ਪ੍ਰਬੰਧ

2.4 ਸਮਾਜ-ਸਭਿਆਚਾਰਕ ਸਰੋਕਾਰ

2.5 ਕਥਾਨਕ ਅਤੇ ਪਾਤਰ ਵਿਧਾਨ

ਯੂਨਿਟ ਤੀਜਾ

3. ਬਲਬੀਰ ਪਰਵਾਨਾ, ***ਖਾਂਡਵਦਾਹ***, ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2019

3.1 ਵਿਸ਼ਾ ਵਸਤੂ

3.2 ਵਿਚਾਰਧਾਰਾ

3.3 ਬਿਰਤਾਂਤ ਵਿਧੀਆਂ

3.4 ਨਾਵਲ ਕਲਾ

3.5 ਕਥਾਨਕ ਅਤੇ ਪਾਤਰ ਚਿਤਰਣ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਸਵਿੰਦਰ ਸਿੰਘ ਉੱਪਲ, **ਪੰਜਾਬੀ ਨਾਵਲ : ਵਿਧੀ ਤੇ ਵਿਚਾਰ,** ਪੰਜਾਬੀ ਰਾਈਟਰਜ਼ ਕੋਆਪਰੇਟਿਵ, ਦਿੱਲੀ
2. ਸੁਖਦੇਵ ਸਿੰਘ ਖਾਹਰਾ, **ਪੰਜਾਬੀ ਨਾਵਲ ਦਾ ਸੰਸਕ੍ਰਿਤਕ ਅਧਿਐਨ,** ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ,1986
3. ਸੁਰਿੰਦਰ ਕੁਮਾਰ ਦਵੇਸ਼ਵਰ, **ਨਾਵਲ ਸ਼ਾਸਤਰ ਤੇ ਪੰਜਾਬੀ ਨਾਵਲ,** ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2002
4. ਗੁਰਪਾਲ ਸਿੰਘ ਸੰਧੂ, **ਪੰਜਾਬੀ ਨਾਵਲ ਦਾ ਇਤਿਹਾਸ,** ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 2005
5. ਜਸਪਾਲ ਕਾਂਗ, **ਪੰਜਾਬੀ ਨਾਵਲ ਦਾ ਗਲਪ ਸ਼ਾਸਤਰ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ, 1995
6. ਜੋਗਿੰਦਰ ਸਿੰਘ ਨਹਿਰੂ, **ਨਾਵਲ ਦੀ ਵਿਧਾ,** ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ
7. ਜੋਗਿੰਦਰ ਸਿੰਘ ਰਾਹੀ, **ਪੰਜਾਬੀ ਨਾਵਲ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ, 1978
8. ਟੀ. ਆਰ. ਵਿਨੋਦ, **ਆਓ ਨਾਵਲ ਪੜ੍ਹੀਏ,** ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2006
9. ਪਰਮਜੀਤ ਕੌਰ ਸਿੱਧੂ, **ਪੰਜਾਬੀ ਨਾਵਲ : ਸਿਧਾਂਤ ਤੇ ਸਮੀਖਿਆ,** ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2013
10. ਰਜਨੀਸ਼ ਬਹਾਦਰ ਸਿੰਘ, **ਗਲਪ ਅਧਿਐਨ,** ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 1999
11. ਰਜਨੀਸ਼ ਬਹਾਦਰ ਸਿੰਘ, **ਪੰਜਾਬੀ ਨਾਵਲ : ਵਿਰਸਾ ਤੇ ਵਰਤਮਾਨ,** ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2020
12. E. M. Forester, ***Aspects of the Novel,*** Edward Arnold, London, 1963
13. Edwin Muir, ***The Structure of the Novel,*** The Hogarth Press, London, 1967

Mapping Matrix of Course BH-PBI-CC-302

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-CC-302) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-CC-302

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-CC-302.1	3	2	3	3	3	2	3	3
BH-PBI-CC-302.2	3	3	3	3	3	2	3	3
BH-PBI-CC-302.3	3	2	3	2	3	2	3	3
BH-PBI-CC-302.4	3	2	3	2	2	3	3	3
Average	**3**	**2.25**	**3**	**2.5**	**2.75**	**2.25**	**3**	**3**

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-CC-302) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-CC-302

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-CC-302.1	3	3	2	3
BH-PBI-CC-302.2	3	3	2	3
BH-PBI-CC-302.3	3	3	2	3
BH-PBI-CC-302.4	3	3	3	3
Average	**3**	**3**	**2.25**	**3**

Semester : III
BH-PBI-CC-303

ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ
(Adhunik Punjabi Kavita)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਕਵਿਤਾ ਅਤੇ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਕਾਵਿ ਪੁਸਤਕ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਕਲਾਤਮਕ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਾਵਿ ਪੁਸਤਕ ਵਿੱਚੋਂ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵਿੱਤਰੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਕਾਵਿ ਪੁਸਤਕ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਕਲਾਤਮਕ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਾਵਿ ਪੁਸਤਕ ਵਿੱਚੋਂ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਆਧੁਨਿਕਤਾ ਅਤੇ ਆਧੁਨਿਕ ਬੋਧ ਤੋਂ ਜਾਣੂ ਕਰਾਉਂਦੇ ਹੋਏ ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦੀ ਵਿਸਥਾਰਤ ਜਾਣਕਾਰੀ ਪ੍ਰਦਾਨ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-CC-303.1	ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦੀ ਇਤਿਹਾਸਕ ਰੂਪ-ਰੇਖਾ ਉਲੀਕਦੇ ਹੋਏ ਆਧੁਨਿਕ ਕਵਿਤਾ ਦੇ ਪ੍ਰਮੁੱਖ ਝੁਕਾਵਾਂ/ ਪ੍ਰਵਿਰਤੀਆਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।
BH-PBI-CC-303.2	ਵਿਦਿਆਰਥੀ ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦੇ ਵਿਧਾਗਤ ਸਰੋਕਾਰਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-CC-303.3	ਵੱਖ-ਵੱਖ ਕਾਵਿ ਸੰਗ੍ਰਿਹਾਂ ਦੇ ਅਧਿਐਨ ਦੁਆਰਾ ਕਾਵਿ ਅਧਿਐਨ ਦੀ ਸੂਝ ਅਤੇ ਸਮਝ ਪੈਦਾ ਹੋਵੇਗੀ।
BH-PBI-CC-303.4	ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਕਵਿਤਾ ਨੂੰ ਪੜ੍ਹਨ ਤੇ ਸਮਝਣ ਦੀ ਰੁਚੀ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ : ਸਿਧਾਂਤ, ਇਤਿਹਾਸ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ

1.1 ਕਾਵਿ ਸਿਧਾਂਤ

1.2 ਆਧੁਨਿਕ ਅਤੇ ਆਧੁਨਿਕਤਾ ਦਾ ਸੰਕਲਪ

1.3 ਆਧੁਨਿਕ ਕਾਵਿ ਰੂਪ ਅਤੇ ਰੂਪਾਕਾਰ

1.4 ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ : ਨਿਕਾਸ ਅਤੇ ਵਿਕਾਸ ਪੜਾਅ

1.5 ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ : ਪ੍ਰਮੁੱਖ ਪ੍ਰਵਿਰਤੀਆਂ

ਯੂਨਿਟ ਦੂਜਾ

2. ਅੰਮ੍ਰਿਤਾ ਪ੍ਰੀਤਮ, ***ਸੁਨੇਹੜੇ***, ਆਰਸੀ ਪਬਲਿਸ਼ਰਜ਼, ਦਿੱਲੀ

2.1 ਵਿਸ਼ਾ ਵਸਤੂ

2.2 ਪਿਆਰ ਅਨੁਭਵ

2.3 ਕਾਵਿ ਜੁਗਤਾਂ

2.4 ਸੰਬੋਧਨ ਵਿਧੀ

2.5 ਨਾਰੀ ਸੰਵੇਦਨਾ

2.6 ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ

ਯੂਨਿਟ ਤੀਜਾ

3. ਮਨਮੋਹਨ, ***ਜ਼ੀਲ***, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2017

3.1 ਕਾਵਿ ਅਨੁਭਵ

3.2 ਕਾਵਿਕ ਜੁਗਤਾਂ

3.3 ਕਾਵਿ ਸਰੋਕਾਰ

3.4 ਆਧੁਨਿਕ ਸੰਵੇਦਨਾ

3.5 ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

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2. ਸੁਖਦੇਵ ਸਿੰਘ, **ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਾਵਿ ਦਾ ਕਾਵਿ ਸ਼ਾਸਤਰ,** ਆਰਸੀ ਪਬਲਿਸ਼ਰਜ਼, ਦਿੱਲੀ
3. ਸਤਿੰਦਰ ਸਿੰਘ, **ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਾਵਿ ਰੂਪ ਅਧਿਐਨ,** ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ
4. ਜਸਵਿੰਦਰ ਸਿੰਘ, **ਨਵੀਂ ਪੰਜਾਬੀ ਕਵਿਤਾ ਪਛਾਣ ਚਿੰਨ੍ਹ,** ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ
5. ਮੋਹਨਜੀਤ ਸਿੰਘ ਅਤੇ ਰਵੇਲ ਸਿੰਘ (ਸੰਪਾ.), **ਸਮਕਾਲੀ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦਾ ਕਾਵਿ ਸ਼ਾਸਤਰ,** ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 2002
6. ਰਤਨ ਸਿੰਘ ਜੱਗੀ , **ਖੋਜ ਪਤ੍ਰਿਕਾ (ਆਧੁਨਿਕ ਕਾਵਿ ਅੰਕ) ਅੰਕ 22**, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1998
7. ਰਾਜਿੰਦਰ ਸਿੰਘ ਭੱਟੀ, **ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਾਵਿ ਸੰਵੇਦਨਾ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ
8. ਰਾਜਿੰਦਰ ਸਿੰਘ ਭੱਟੀ, **ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਾਵਿ ਦਾ ਸੁਹਜ ਸ਼ਾਸਤਰੀ ਪਰਿਪੇਖ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ
9. ਰਾਜਿੰਦਰ ਪਾਲ ਸਿੰਘ, **ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦਾ ਇਤਿਹਾਸ,** ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 2006

Mapping Matrix of Course BH-PBI-CC-303

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-CC-303) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-CC-303

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-CC-303.1	3	3	3	3	3	2	3	3
BH-PBI-CC-303.2	3	3	3	3	3	2	3	3
BH-PBI-CC-303.3	3	2	3	2	3	2	3	3
BH-PBI-CC-303.4	3	2	3	2	2	3	3	3
Average	3	2.5	3	2.5	2.75	2.25	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-CC-303) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-CC-303

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-CC-303.1	3	3	2	3
BH-PBI-CC-303.2	3	3	2	3
BH-PBI-CC-303.3	3	3	2	3
BH-PBI-CC-303.4	3	3	3	3
Average	3	3	2.25	3

Semester : III

BH-PBI-GE- 304

ਪੰਜਾਬੀ ਗ਼ਜ਼ਲ਼ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ

(Punjabi Gazal Ate Viharak Punjabi)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਗ਼ਜ਼ਲ਼ ਅਤੇ ਪੰਜਾਬੀ ਗ਼ਜ਼ਲ਼ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਗ਼ਜ਼ਲ਼ ਸੰਗ੍ਰਹਿ ਵਿੱਚੋਂ ਗ਼ਜ਼ਲ਼ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਗ਼ਜ਼ਲ਼ ਸੰਗ੍ਰਹਿ ਵਿੱਚੋਂ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਗ਼ਜ਼ਲ਼ਗੋ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਦੇ ਪੰਜ ਉਪ-ਭਾਗ ਹਨ। ਉਪ-ਭਾਗ ਪਹਿਲਾ ਵਿੱਚ ਪੰਜਾਬੀ ਵਿੱਚ ਬਿੰਦੀ, ਟਿੱਪੀ ਅਤੇ ਅੱਧਕ ਦੇ ਨੇਮ, ਉਪ-ਭਾਗ ਦੂਜਾ ਵਿੱਚ ਸਮਾਨਾਰਥਕ, ਵਿਪਰੀਤਾਰਥਕ ਅਤੇ ਬਹੁਅਰਥਕ ਸ਼ਬਦ, ਉਪਭਾਗ ਤੀਜਾ ਵਿੱਚ ਵਾਕ, ਵਾਕੰਸ਼ ਅਤੇ ਉਪ ਵਾਕ, ਉਪਭਾਗ ਚੌਥਾ ਵਿੱਚ ਪੰਜਾਬੀ ਵਾਕ ਤਰਤੀਬ ਅਤੇ ਉਪ-ਭਾਗ ਪੰਜਵਾਂ ਵਿੱਚ ਵਾਕ ਸ਼ੁੱਧੀ ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਉਪ-ਭਾਗ ਛੇ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਗ਼ਜ਼ਲ਼ ਅਤੇ ਪੰਜਾਬੀ ਗ਼ਜ਼ਲ਼ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਵਿਹਾਰਕ ਪੱਖ ਬਾਰੇ ਸਮਝ ਪੈਦਾ ਕਰਨਾ।
- ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੇ ਅਧਿਐਨ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਪ੍ਰਤੀ ਵਿਸ਼ੇਸ਼ ਸਮਝ ਪੈਦਾ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-GE- 304.1	ਗ਼ਜ਼ਲ਼ ਸਬੰਧੀ ਸਿਧਾਂਤਕ ਅਤੇ ਵਿਹਾਰਕ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।
BH-PBI-GE- 304.2	ਪੰਜਾਬੀ ਗ਼ਜ਼ਲ਼ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸਕ ਵਿਕਾਸ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।
BH-PBI-GE- 304.3	ਕੁਝ ਵਿਸ਼ੇਸ਼ ਗ਼ਜ਼ਲ਼ਗੋਆਂ ਦੀਆਂ ਗ਼ਜ਼ਲ਼ਾਂ ਦੀ ਵਿਸ਼ੇਸ਼ ਪੜ੍ਹਤ ਦੁਆਰਾ ਗ਼ਜ਼ਲ਼ ਦੇ ਵਿਹਾਰਕ ਅਧਿਐਨ ਦੀ ਯੋਗਤਾ ਹਾਸਲ ਹੋਵੇਗੀ।
BH-PBI-GE- 304.4	ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੀ ਪੜ੍ਹਾਈ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਸੰਰਚਨਾ ਅਤੇ ਵਰਤੋਂ ਵਿਹਾਰ ਬਾਰੇ ਸਮਝ ਅਤੇ ਮੁਹਾਰਤ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਗ਼ਜ਼ਲ਼ ਅਤੇ ਪੰਜਾਬੀ ਗ਼ਜ਼ਲ਼ : ਸਿਧਾਂਤ, ਇਤਿਹਾਸ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ

1.1 ਗ਼ਜ਼ਲ਼ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤਕਨੀਕ

1.2 ਪੰਜਾਬੀ ਗ਼ਜ਼ਲ਼ : ਆਰੰਭ ਅਤੇ ਵਿਕਾਸ

1.3 ਪੰਜਾਬੀ ਗ਼ਜ਼ਲ਼ : ਪ੍ਰਮੁੱਖ ਝੁਕਾਅ

ਯੂਨਿਟ ਦੂਜਾ

2. ਗੁਰਤੇਜ ਕੋਹਾਰਵਾਲਾ, **ਪਾਣੀ ਦਾ ਹਾਸ਼ੀਆ**, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, 2015

2.1 ਪ੍ਰਮੁੱਖ ਸਰੋਕਾਰ

2.2 ਕਲਾ ਪੱਖ/ ਤਕਨੀਕ

2.3 ਪਾਠਗਤ ਅਧਿਐਨ

3.4 ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ

ਯੂਨਿਟ ਤੀਜਾ

3. ਵਿਹਾਰਕ ਪੰਜਾਬੀ

3.1 ਪੰਜਾਬੀ ਵਿੱਚ ਬਿੰਦੀ, ਟਿੱਪੀ ਅਤੇ ਅੱਧਕ ਦੀ ਵਰਤੋਂ ਦੇ ਨੇਮ

3.2 ਸਮਾਨਾਰਥਕ, ਵਿਪਰੀਤਾਰਥਕ ਅਤੇ ਬਹੁਅਰਥਕ ਸ਼ਬਦ

3.3 ਵਾਕ, ਵਾਕੰਸ਼ ਅਤੇ ਉਪ ਵਾਕ

3.4 ਪੰਜਾਬੀ ਵਾਕ ਤਰਤੀਬ

3.5 ਵਾਕ ਸ਼ੁੱਧੀ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਬੂਟਾ ਸਿੰਘ ਬਰਾੜ, ਪੰਜਾਬੀ ਵਿਆਕਰਨ : ਸਿਧਾਂਤ ਅਤੇ ਵਿਹਾਰ, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2012

Mapping Matrix of Course BH-PBI-GE- 304

Mapping: Mapping is a process of representing the correlation between COs and POs, Cos and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-GE- 304) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-GE- 304

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-GE- 304.1	3	3	3	2	2	3	3	3
BH-PBI-GE- 304.2	3	3	3	2	2	3	3	3
BH-PBI-GE- 304.3	3	3	3	2	2	3	3	3
BH-PBI-GE- 304.4	3	3	3	2	2	3	3	3
Average	3	3	3	2	2	3	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-GE- 304) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-GE- 304

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-GE- 304.1	3	2	3	3
BH-PBI-GE- 304.2	3	3	3	3
BH-PBI-GE- 304.3	3	3	3	3
BH-PBI-GE- 304.4	3	3	3	3
Average	3	2.75	3	3

Semester : IV
BH-PBI-CC- 401

ਮੱਧਕਾਲੀ ਬਿਰਤਾਂਤਕ ਕਾਵਿ
(Madhkali Birtantak Kav)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਮੱਧਕਾਲੀਨਤਾ ਦੇ ਸੰਕਲਪ ਅਤੇ ਮੱਧਕਾਲੀਨ ਬਿਰਤਾਂਤਕ ਕਾਵਿ ਨਾਲ ਸਬੰਧਤ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀਆਂ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਕਿੱਸੇ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਕਲਾਤਮਕ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਿੱਸਾਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਬਾਰੇ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਜੰਗਨਾਮਾ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਕਲਾਤਮਕ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਮੱਧਕਾਲੀਨ ਚੇਤਨਾ ਦੇ ਹਵਾਲੇ ਨਾਲ ਮੱਧਕਾਲ ਵਿੱਚ ਪੈਦਾ ਹੋਈਆਂ ਬਿਰਤਾਂਤਕ ਕਾਵਿ ਧਾਰਾਵਾਂ – ਕਿੱਸਾ ਅਤੇ ਜੰਗਨਾਮਾ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-CC- 401.1	ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਬਿਰਤਾਂਤ ਅਤੇ ਕਾਵਿ ਦੇ ਆਪਸੀ ਸਬੰਧਾਂ ਦਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ।
BH-PBI-CC- 401.2	ਕਿੱਸਾ ਅਤੇ ਜੰਗਨਾਮਾ ਕਾਵਿ ਵਿਚਲੀਆਂ ਵਿਚਾਰਧਾਰਕ ਸਾਂਝਾਂ ਅਤੇ ਵਖਰੇਵਿਆਂ ਦੀ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।
BH-PBI-CC- 401.3	ਕਿੱਸਾ ਕਾਵਿ ਦੇ ਸੰਕਲਪਿਕ ਗਿਆਨ ਦੁਆਰਾ ਪੰਜਾਬੀ ਕਿੱਸਾ ਪ੍ਰੰਪਰਾ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-CC- 401.4	ਕਿੱਸਾ ਅਤੇ ਜੰਗਨਾਮਾ ਸਾਹਿਤ ਦੇ ਹਵਾਲੇ ਨਾਲ ਮੱਧਕਾਲੀਨ ਪੰਜਾਬੀ ਸਮਾਜ-ਸਭਿਆਚਾਰ ਨੂੰ ਸਮਝਣ ਦੀ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਮੱਧਕਾਲੀਨ ਬਿਰਤਾਂਤਕ ਕਾਵਿ : ਸਿਧਾਤਕ ਪਰਿਪੇਖ

1.1 ਮੱਧਕਾਲੀਨਤਾ ਦਾ ਸੰਕਲਪ

1.2 ਪੰਜਾਬੀ ਮੱਧਕਾਲੀਨ ਕਾਵਿ ਰੂਪ (ਕਿੱਸਾ, ਵਾਰ ਅਤੇ ਜੰਗਨਾਮਾ)

1.3 ਮੱਧਕਾਲੀਨ ਸਾਹਿਤ : ਸੁਭਾਅ ਅਤੇ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

1.4 ਕਿੱਸਾ, ਵਾਰ ਅਤੇ ਜੰਗਨਾਮਾ : ਅੰਤਰ ਨਿਖੇੜ

ਯੂਨਿਟ ਦੂਜਾ

2. ਬਿਕਰਮ ਸਿੰਘ ਘੁੰਮਣ (ਸੰਪਾ.), ***ਪੂਰਨ ਭਗਤ*** (ਕਾਦਰਯਾਰ), ਵਾਰਿਸ ਸ਼ਾਹ ਫ਼ਾਊਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ, 2003

2.1 ਕਿੱਸਾ : ਬਿਰਤਾਂਤਕ ਵਿਧੀਆਂ

2.2 ਵਿਹਾਰਕ ਅਧਿਐਨ

2.3 ਨੈਤਿਕਤਾ ਅਤੇ ਸਦਾਚਾਰ ਦਾ ਸੰਕਲਪ

2.4 ਕਥਾ ਸਾਰ

2.5 ਸਭਿਆਚਾਰਕ ਪੱਖ

2.6 ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ

ਯੂਨਿਟ ਤੀਜਾ

3. ਰਤਨ ਸਿੰਘ ਜੱਗੀ (ਸੰਪਾ.), ***ਸ਼ਾਹ ਮੁਹੰਮਦ : ਜੰਗਨਾਮਾ ਸਿੰਘਾਂ ਅਤੇ ਫ਼ਰੰਗੀਆਂ***, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1999

3.1 ਪੰਜਾਬੀਅਤ ਦਾ ਸੰਕਲਪ

3.2 ਰਾਜਨੀਤਿਕ ਚੇਤਨਾ

3.3 ਬਿਰਤਾਂਤ ਵਿਧੀਆਂ

3.4 ਰੂਪਾਕਾਰ ਵਿਲੱਖਣਤਾ

3.5 ਭਾਸ਼ਾ ਸ਼ੈਲੀ

3.6 ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਅਮਰਜੀਤ ਸਿੰਘ ਕਾਂਗ, **ਮੱਧਕਾਲੀ ਸਾਹਿਤ ਅਧਿਐਨ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ
2. ਸੁਤਿੰਦਰ ਸਿੰਘ ਨੂਰ, **ਪੰਜਾਬੀ ਵਾਰ ਕਾਵਿ ਦਾ ਇਤਿਹਾਸ,** ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 2005
3. ਕੁਲਬੀਰ ਸਿੰਘ ਕਾਂਗ, **ਪੰਜਾਬੀ ਕਿੱਸਾ ਕਾਵਿ ਦਾ ਇਤਿਹਾਸ,** ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 2005
4. ਗੁਰਦੇਵ ਸਿੰਘ, **ਜੰਗਨਾਮਾ : ਸਰੂਪ ਸਿਧਾਂਤ ਤੇ ਵਿਕਾਸ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
5. ਜਗਬੀਰ ਸਿੰਘ, **ਮੱਧਕਾਲੀ ਸਾਹਿਤ ਸਭਿਆਚਾਰ,** ਆਰਸੀ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ
6. ਬਿਕਰਮ ਸਿੰਘ ਘੁੰਮਣ, **ਪੰਜਾਬੀ ਕਿੱਸਾ ਕਾਵਿ ਦਾ ਬਿਰਤਾਂਤ ਸ਼ਾਸਤਰ,** ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ, 2001
7. ਭੀਮ ਇੰਦਰ ਸਿੰਘ, **ਸ਼ਾਹ ਮੁਹੰਮਦ : ਜੀਵਨ ਤੇ ਰਚਨਾ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2006
8. ਰਤਨ ਸਿੰਘ ਜੱਗੀ, **ਖੋਜ ਪਤ੍ਰਿਕਾ (ਕਿੱਸਾ ਕਾਵਿ ਅੰਕ) ਅੰਕ 27,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1997

Mapping Matrix of Course BH-PBI-CC- 401

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-CC- 401) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-CC- 401

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-CC- 401.1	3	2	3	3	3	2	3	3
BH-PBI-CC- 401.2	3	3	3	3	3	2	3	3
BH-PBI-CC- 401.3	3	2	3	2	3	2	3	3
BH-PBI-CC- 401.4	3	2	3	2	2	3	3	3
Average	3	2.25	3	2.5	2.75	2.25	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-CC- 401) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-CC- 401

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-CC- 401.1	3	3	2	3
BH-PBI-CC- 401.2	3	3	2	3
BH-PBI-CC- 401.3	3	3	2	3
BH-PBI-CC- 401.4	3	3	3	3
Average	3	3	2.25	3

Semester : IV

BH-PBI-CC- 402

ਪੰਜਾਬੀ ਗ਼ਦਰ ਕਾਵਿ ਅਤੇ ਕ੍ਰਾਂਤੀਕਾਰੀ ਲਹਿਰਾਂ

(Punjabi Gadar Kav ate Krantikari Lehran)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਪੰਜਾਬੀ ਦੀਆਂ ਲੋਕ ਲਹਿਰਾਂ ਨਾਲ ਸਬੰਧਤ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀਆਂ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਕਾਵਿ ਪੁਸਤਕ ਵਿੱਚੋਂ ਕਵਿਤਾ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਕਲਾਤਮਕ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਵਾਰ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਕਲਾਤਮਕ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬ ਵਿੱਚ ਸਮੇਂ ਸਮੇਂ ਪੈਦਾ ਹੋਈਆਂ ਲਹਿਰਾਂ ਦੇ ਸਮਾਜਿਕ ਅਤੇ ਰਾਜਨੀਤਿਕ ਮਹੱਤਵ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-CC- 402.1	ਵਿਦਿਆਰਥੀਆਂ ਪੰਜਾਬ ਵਿੱਚ ਸਮੇਂ ਸਮੇਂ ਪੈਦਾ ਹੋਈਆਂ ਲਹਿਰਾਂ ਦੇ ਪਿੱਛੇ ਕਾਰਜਸ਼ੀਲ ਕਾਰਨਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-CC- 402.2	ਵਿਦਿਆਰਥੀਆਂ ਪੰਜਾਬ ਵਿੱਚ ਸਮੇਂ ਸਮੇਂ ਪੈਦਾ ਹੋਈਆਂ ਲਹਿਰਾਂ ਦੇ ਸਮਾਜਿਕ, ਰਾਜਨੀਤਿਕ ਅਤੇ ਸਭਿਆਚਾਰਕ ਮਹੱਤਵ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-CC- 402.3	ਵਿਦਿਆਰਥੀ ਵਿਭਿੰਨ ਲਹਿਰਾਂ ਦੇ ਪ੍ਰਭਾਵ ਅਧੀਨ ਰਚੇ ਗਏ ਸਾਹਿਤ ਦੀ ਵਿਸ਼ੇਸ਼ ਪੜ੍ਹਤ ਰਾਹੀਂ ਸਬੰਧਤ ਲਹਿਰਾਂ ਦੀ ਮਹੱਤਤਾ ਬਾਰੇ ਵਿਸ਼ੇਸ਼ ਜਾਣਕਾਰੀ ਹਾਸਲ ਕਰਨਗੇ।
BH-PBI-CC- 402.4	ਵਿਦਿਆਰਥੀ ਇਹਨਾਂ ਲਹਿਰਾਂ ਦੇ ਭਾਰਤੀ ਆਜ਼ਾਦੀ ਅੰਦੋਲਨ ਵਿੱਚ ਪਾਏ ਵਿਸ਼ੇਸ਼ ਯੋਗਦਾਨ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਪੰਜਾਬੀ ਲੋਕ ਲਹਿਰਾਂ : ਸਿਧਾਂਤ ਤੇ ਇਤਿਹਾਸ
1.1 ਪੰਜਾਬ ਦੀਆਂ ਲੋਕ ਲਹਿਰਾਂ ਦੀ ਉਤਪਤੀ
1.2 ਗ਼ਦਰ ਲਹਿਰ
1.3 ਕੂਕਾ ਲਹਿਰ
1.4 ਸਿੰਘ ਸਭਾ ਲਹਿਰ
1.5 ਆਰੀਆ ਸਮਾਜ ਲਹਿਰ
1.6 ਅਕਾਲੀ ਲਹਿਰ

ਯੂਨਿਟ ਦੂਜਾ

2. ਹਰਬੰਸ ਸਿੰਘ ਲਿੱਟ (ਸੰਪਾ.), **ਗ਼ਦਰ ਕਾਵਿ ਗੂੰਜਾਂ**, ਮਨਪ੍ਰੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ, 2015
2.1 ਗ਼ਦਰ ਸੰਕਲਪ ਦੀ ਵਿਆਖਿਆ , ਇਤਿਹਾਸ ਅਤੇ ਰਾਜਨੀਤਿਕ ਪਿਛੋਕੜ
2.2 ਗ਼ਦਰ ਕਾਵਿ ਦਾ ਸ਼ਿਲਪ ਵਿਧਾਨ
2.3 ਗ਼ਦਰ ਕਾਵਿ ਦੇ ਸਰੋਕਾਰ ਅਤੇ ਉਦੇਸ਼
2.4 ਡਾਇਸਪੋਰਿਕ-ਚੇਤਨਾ
2.5 ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ

ਯੂਨਿਟ ਤੀਜਾ

3. ਹਰਸਾ ਸਿੰਘ ਚਾਤਰ, **ਕੂਕਿਆਂ ਦੀ ਵਾਰ** (***ਕਾਵਿ ਪੁਸ਼ਪਾਂਜਲੀ*** ਸੰਪਾ. ਜਸਵੰਤ ਸਿੰਘ ਮਸਤ) ਐਵਿਸ ਪਬਲੀਕੇਸ਼ਨਜ਼, ਦਿੱਲੀ, 2017
3.1 ਵਾਰ ਕਾਵਿ ਰੂਪਾਕਾਰਕ ਅਧਿਐਨ
3.2 ਵਿਹਾਰਕ ਅਧਿਐਨ/ ਕਥਾ ਬਿਆਨ
3.3 ਵਿਚਾਰਧਾਰਾ
3.4 ਪਉੜੀ ਪ੍ਰਬੰਧ
3.5 ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਸੁਵਰਨ ਸਿੰਘ ਵਿਰਕ, ਕੂਕਾ ਲਹਿਰ ਦੇ ਅਮਰ ਨਾਇਕ, ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ
2. ਸੁਰਜੀਤ ਸਿੰਘ, ਪੰਜਾਬ ਦੀਆਂ ਰਾਜਨੀਤਿਕ ਅਤੇ ਇਤਿਹਾਸਕ ਲਹਿਰਾਂ, ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ
3. ਹਰਬੰਸ ਸਿੰਘ ਲਿੱਟ, ਗ਼ਦਰ ਲਹਿਰ ਤੇ ਮੁੱਢਲਾ ਪੰਜਾਬੀ ਸਾਹਿਤ, ਆਰਸੀ ਪਬਲਿਸ਼ਰਜ਼, ਦਿੱਲੀ
4. ਹਰਬੰਸ ਸਿੰਘ ਲਿੱਟ , ਗ਼ਦਰ ਲਹਿਰ : ਇਤਿਹਾਸ ਅਤੇ ਰਾਜਨੀਤੀ, ਮਨਪ੍ਰੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ
5. ਹਰਬੰਸ ਸਿੰਘ ਲਿੱਟ , ਗ਼ਦਰ ਸਾਹਿਤ ਦਾ ਸ਼ਿਲਪ ਵਿਧਾਨ, ਮਨਪ੍ਰੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ
6. ਹਰੀਸ਼ ਕੇ. ਪੁਰੀ, ਗ਼ਦਰ ਲਹਿਰ : ਵਿਚਾਰਧਾਰਾ, ਜਥੇਬੰਦੀ, ਰਣਨੀਤੀ, ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ

Mapping Matrix of Course BH-PBI-CC- 402

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-CC- 402) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-CC- 402

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-CC- 402.1	3	3	3	3	3	2	2	3
BH-PBI-CC- 402.2	3	2	3	3	3	2	3	3
BH-PBI-CC- 402.3	3	3	3	3	3	2	3	3
BH-PBI-CC- 402.4	2	3	3	2	3	2	3	3
Average	**2.75**	**2.75**	**3**	**2.75**	**3**	**2**	**2.75**	**3**

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-CC- 402) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-CC- 402

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-CC- 402.1	3	3	2	3
BH-PBI-CC- 402.2	3	3	2	3
BH-PBI-CC- 402.3	3	3	2	3
BH-PBI-CC- 402.4	3	3	3	3
Average	**3**	**3**	**2.25**	**3**

Semester : IV
BH-PBI-CC- 403

ਪੰਜਾਬੀ ਨਾਟਕ
(Punjabi Natak)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਨਾਟਕ ਅਤੇ ਪੰਜਾਬੀ ਨਾਟਕ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਾਟਕ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਕਲਾਤਮਕ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਨਾਟਕ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਨਾਟਕਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਾਟਕ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਕਲਾਤਮਕ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਨਾਟਕ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਨਾਟਕਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਨਾਟਕ ਅਤੇ ਰੰਗਮੰਚ ਦੇ ਸਿਧਾਂਤਕ ਪੱਖ ਤੋਂ ਜਾਣੂੰ ਕਰਾਉਂਦੇ ਹੋਏ ਪੰਜਾਬੀ ਨਾਟਕ ਦੇ ਇਤਿਹਾਸ, ਝੁਕਾਵਾਂ ਅਤੇ ਪੰਜਾਬੀ ਨਾਟਕ ਬਾਰੇ ਸੂਝ ਵਿਕਸਤ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-CC- 403.1	ਵਿਦਿਆਰਥੀਆਂ ਨਾਟਕੀ ਵਿਧਾ ਦੇ ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-CC- 403.2	ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਨਾਟਕ ਦੇ ਇਤਿਹਾਸ, ਇਸਦੇ ਪ੍ਰਮੁਖ ਝੁਕਾਵਾਂ/ ਪ੍ਰਵਿਰਤੀਆਂ ਦੀ ਜਾਣਕਾਰੀ ਹਾਸਲ ਹੋਵੇਗੀ।
BH-PBI-CC- 403.3	ਵੱਖ-ਵੱਖ ਨਾਟਕਕਾਰਾਂ ਦੀਆਂ ਨਾਟ ਰਚਨਾਵਾਂ ਦੇ ਅਧਿਐਨ ਦੁਆਰਾ ਨਾਟ ਅਧਿਐਨ ਦੀ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।
BH-PBI-CC- 403.4	ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਨਾਟਕ ਨੂੰ ਪੜ੍ਹਨ ਤੇ ਖੇਡਣ ਦੀ ਰੁਚੀ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਨਾਟਕ ਅਤੇ ਪੰਜਾਬੀ ਨਾਟਕ : ਸਿਧਾਂਤ ਅਤੇ ਇਤਿਹਾਸ

1.1 ਨਾਟਕ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

1.2 ਨਾਟਕੀ ਜੁਗਤਾਂ

1.3 ਪੰਜਾਬੀ ਨਾਟਕ : ਆਰੰਭ ਅਤੇ ਵਿਕਾਸ ਪੜਾਅ

1.4 ਪੰਜਾਬੀ ਨਾਟਕ : ਪ੍ਰਮੁੱਖ ਪ੍ਰਵਿਰਤੀਆਂ

ਯੂਨਿਟ ਦੂਜਾ

2. ਹਰਚਰਨ ਸਿੰਘ, ***ਰਾਣੀ ਜਿੰਦਾਂ***, ਆਰਸੀ ਪਬਲਿਸ਼ਰਜ਼, ਨਵੀਂ ਦਿੱਲੀ

2.1 ਵਿਸ਼ੈਗਤ ਅਧਿਐਨ

2.2 ਨਾਟਕੀ ਜੁਗਤਾਂ

2.3 ਪਾਤਰ ਚਿੱਤਰਣ

2.4 ਕਥਾਨਕ

2.5 ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ

ਯੂਨਿਟ ਤੀਜਾ

3. ਅਜਮੇਰ ਔਲਖ, ***ਇੱਕ ਰਮਾਇਣ ਹੋਰ***, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2018

3.1 ਵਿਸ਼ੈਗਤ ਅਧਿਐਨ

3.2 ਪ੍ਰਤੀਕ ਪ੍ਰਬੰਧ

3.3 ਨਾਟਕੀ ਜੁਗਤਾਂ

3.4 ਪਾਤਰ ਚਿੱਤਰਣ

3.5 ਕਥਾਨਕ

3.6 ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਸਤੀਸ਼ ਕੁਮਾਰ ਵਰਮਾ, **ਪੰਜਾਬੀ ਨਾਟਕ ਦਾ ਇਤਿਹਾਸ,** ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ
2. ਸਤੀਸ਼ ਕੁਮਾਰ ਵਰਮਾ, **ਪੰਜਾਬੀ ਨਾਟ ਚਿੰਤਨ,** ਜੈਨ ਸੰਨਜ਼ ਪ੍ਰਕਾਸ਼ਨ, ਸਰਹਿੰਦ, 1989
3. ਸਤੀਸ਼ ਕੁਮਾਰ ਵਰਮਾ, **ਪੰਜਾਬੀ ਨਾਟਕ ਦਾ ਇਤਿਹਾਸ,** ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 2005
4. ਸੁਖਦੇਵ ਸਿੰਘ, **ਅਜਮੇਰ ਔਲਖ ਦੀ ਨਾਟ-ਭੂਮੀ,** ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2002
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6. ਗੁਰਦਿਆਲ ਸਿੰਘ ਫੁੱਲ, **ਪੰਜਾਬੀ ਇਕਾਂਗੀ : ਸਰੂਪ ਸਿਧਾਂਤ ਤੇ ਵਿਕਾਸ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ,1987
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8. ਨਵਨਿੰਦਰਾ ਬਹਿਲ, **ਨਾਟਕੀ ਸਾਹਿਤ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2001
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Mapping Matrix of Course BH-PBI-CC- 403

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-CC- 403) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-CC- 403

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-CC- 403.1	3	2	3	3	3	2	3	3
BH-PBI-CC- 403.2	3	3	3	3	3	2	3	3
BH-PBI-CC- 403.3	3	2	3	2	3	2	3	3
BH-PBI-CC- 403.4	3	2	3	2	2	3	3	3
Average	**3**	**2.25**	**3**	**2.5**	**2.75**	**2.25**	**3**	**3**

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-CC- 403) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-CC- 403

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-CC- 403.1	3	3	3	3
BH-PBI-CC- 403.2	3	3	2	3
BH-PBI-CC- 403.3	3	3	2	3
BH-PBI-CC- 403.4	3	3	3	3
Average	**3**	**3**	**2.5**	**3**

Semester : IV

BH-PBI-GE- 404

ਪੰਜਾਬੀ ਇਕਾਂਗੀ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ

(Punjabi Ikangi Ate Viharak Punjabi)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਇਕਾਂਗੀ ਅਤੇ ਪੰਜਾਬੀ ਇਕਾਂਗੀ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਇਕਾਂਗੀ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਕਲਾਤਮਕ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ/ ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਇਕਾਂਗੀ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਇਕਾਂਗੀਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਦੇ ਪੰਜ ਉਪ-ਭਾਗ ਹਨ। ਉਪ-ਭਾਗ ਪਹਿਲਾ ਵਿੱਚ ਸਾਧਰਣ ਵਾਕ, ਮਿਸ਼ਰਤ ਵਾਕ, ਸੰਯੁਕਤ ਵਾਕ, ਉਪ-ਭਾਗ ਦੂਜਾ ਵਿੱਚ ਤਤਸਮ-ਤਦਭਵ ਸ਼ਬਦ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵਰਤੋਂ, ਉਪਭਾਗ ਤੀਜਾ ਵਿੱਚ ਪੰਜਾਬੀ ਦੀਆਂ ਸਵਰ ਧੁਨੀਆਂ, ਉਪਭਾਗ ਚੌਥਾ ਵਿੱਚ ਪੰਜਾਬੀ ਦੀਆਂ ਵਿਅੰਜਨ ਧੁਨੀਆਂ ਅਤੇ ਉਪ-ਭਾਗ ਪੰਜਵਾਂ ਵਿੱਚ ਪੰਜਾਬੀ ਦੀਆਂ ਅਖੰਡੀ ਧੁਨੀਆਂ ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਉਪ-ਭਾਗ ਛੇ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਇਕਾਂਗੀ ਅਤੇ ਰੰਗਮੰਚ ਦੇ ਸਿਧਾਂਤਕ ਪੱਖ ਤੋਂ ਜਾਣੂੰ ਕਰਾਉਂਦੇ ਹੋਏ ਪੰਜਾਬੀ ਇਕਾਂਗੀ ਦੇ ਇਤਿਹਾਸ, ਝੁਕਾਵਾਂ ਅਤੇ ਪੰਜਾਬੀ ਇਕਾਂਗੀ ਬਾਰੇ ਸੂਝ ਵਿਕਸਤ ਕਰਨਾ।
- ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੇ ਅਧਿਐਨ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਪ੍ਰਤੀ ਵਿਸ਼ੇਸ਼ ਸਮਝ ਪੈਦਾ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-GE- 404.1	ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਇਕਾਂਗੀ ਦੇ ਇਤਿਹਾਸਕ, ਇਸਦੇ ਪ੍ਰਮੁਖ ਝੁਕਾਵਾਂ/ ਪ੍ਰਵਿਰਤੀਆਂ ਦੀ ਜਾਣਕਾਰੀ ਹਾਸਲ ਹੋਵੇਗੀ।
BH-PBI-GE- 404.2	ਵੱਖ-ਵੱਖ ਇਕਾਂਗੀਕਾਰਾਂ ਦੀਆਂ ਇਕਾਂਗੀਆਂ ਦੇ ਅਧਿਐਨ ਦੁਆਰਾ ਇਕਾਂਗੀ ਅਧਿਐਨ ਦੀ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।
BH-PBI-GE- 404.3	ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਇਕਾਂਗੀ ਨੂੰ ਪੜ੍ਹਨ ਤੇ ਖੇਡਣ ਦੀ ਰੁਚੀ ਪੈਦਾ ਹੋਵੇਗੀ।
BH-PBI-GE- 404.4	ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੀ ਪੜ੍ਹਾਈ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਸੰਰਚਨਾ ਅਤੇ ਵਰਤੋਂ ਵਿਹਾਰ ਬਾਰੇ ਸਮਝ ਅਤੇ ਮੁਹਾਰਤ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਇਕਾਂਗੀ ਅਤੇ ਪੰਜਾਬੀ ਇਕਾਂਗੀ : ਸਿਧਾਂਤ ਅਤੇ ਇਤਿਹਾਸ

1.1 ਇਕਾਂਗੀ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

1.2 ਪੰਜਾਬੀ ਇਕਾਂਗੀ : ਆਰੰਭ ਅਤੇ ਵਿਕਾਸ ਪੜਾਅ

1.3 ਪੰਜਾਬੀ ਇਕਾਂਗੀ : ਪ੍ਰਮੁੱਖ ਪ੍ਰਵਿਰਤੀਆਂ

1.4 ਨਾਟਕ ਅਤੇ ਇਕਾਂਗੀ ਵਿਚਲਾ ਅੰਤਰ

ਯੂਨਿਟ ਦੂਜਾ

2. ਬਲਵੰਤ ਗਾਰਗੀ, ***ਕੁਆਰੀ ਟੀਸੀ***, ਨਵਯੁੱਗ ਪਬਲਿਸ਼ਰ, ਦਿੱਲੀ

2.1 ਪਾਠਗਤ ਅਧਿਐਨ

2.2 ਇਕਾਂਗੀ ਕਲਾ

2.3 ਪਾਤਰ ਚਿੱਤਰਣ

2.4 ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ

ਯੂਨਿਟ ਤੀਜਾ

3. ਵਿਹਾਰਕ ਪੰਜਾਬੀ

3.1 ਸਾਧਰਣ ਵਾਕ, ਮਿਸ਼ਰਤ ਵਾਕ, ਸੰਯੁਕਤ ਵਾਕ

3.2 ਤਤਸਮ-ਤਦਭਵ ਸ਼ਬਦ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵਰਤੋਂ

3.3 ਪੰਜਾਬੀ ਦੀਆਂ ਸਵਰ ਧੁਨੀਆਂ

3.4 ਪੰਜਾਬੀ ਦੀਆਂ ਵਿਅੰਜਨ ਧੁਨੀਆਂ

3.5 ਪੰਜਾਬੀ ਦੀਆਂ ਅਖੰਡੀ ਧੁਨੀਆਂ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਗੁਰਦਿਆਲ ਸਿੰਘ ਫੁੱਲ, **ਪੰਜਾਬੀ ਇਕਾਂਗੀ : ਸਰੂਪ ਸਿਧਾਂਤ ਤੇ ਵਿਕਾਸ**, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1987
2. ਰਵੇਲ ਸਿੰਘ, **ਬਲਵੰਤ ਗਾਰਗੀ ਦੀਆਂ ਨਾਟ-ਜੁਗਤਾਂ,** ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2003
3. **ਸਮਦਰਸ਼ੀ**, ਬਲਵੰਤ ਗਾਰਗੀ ਵਿਸ਼ੇਸ਼ ਅੰਕ, ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 2003

Mapping Matrix of Course BH-PBI-GE- 404

Mapping: Mapping is a process of representing the correlation between COs and POs, Cos and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-GE- 404) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-GE- 404

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-GE- 404.1	3	3	3	2	2	3	3	3
BH-PBI-GE- 404.2	3	3	3	2	2	3	3	3
BH-PBI-GE- 404.3	3	3	3	2	2	3	3	3
BH-PBI-GE- 404.4	3	3	3	2	2	3	3	3
Average	3	3	3	2	2	3	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-GE- 404) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-GE- 404

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-GE- 404.1	3	2	3	3
BH-PBI-GE- 404.2	3	3	3	3
BH-PBI-GE- 404.3	3	3	3	3
BH-PBI-GE- 404.4	3	3	3	3
Average	3	2.75	3	3

Semester : V
BH-PBI-CC- 501

ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ
(Parvasi Punjabi Sahit)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਪਰਵਾਸ ਅਤੇ ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਦਾ ਪਹਿਲਾ ਸੁਆਲ ਕਵਿਤਾ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਪਰਵਾਸੀ ਚੇਤਨਾ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਵਿਤਾਵਾਂ ਦੀ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਦਾ ਪਹਿਲਾ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀਆਂ ਕਹਾਣੀਆਂ ਦੇ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ/ ਵਿਸ਼ੇ/ ਪਰਵਾਸੀ ਚੇਤਨਾ/ ਸਮੱਸਿਆ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਹਾਣੀਆਂ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਹਾਣੀਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਦਾ ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸ, ਇਸਦੇ ਝੁਕਾਵਾਂ ਅਤੇ ਪ੍ਰਮੁੱਖ ਸਾਹਿਤਕਾਰਾਂ ਨਾਲ ਪਰਿਚੈ ਕਰਾਉਣਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-CC- 501.1	ਪਰਵਾਸੀ ਚੇਤਨਾ ਦੇ ਹਵਾਲੇ ਨਾਲ ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਮੁੱਖ ਸਰੋਕਾਰਾਂ ਨਾਲ ਜਾਣ-ਪਛਾਣ ਹੋਵੇਗੀ।
BH-PBI-CC- 501.2	ਵਿਦਿਆਰਥੀ ਪਰਵਾਸੀ ਸਾਹਿਤਕਾਰਾਂ ਦੀਆਂ ਰਚਨਾਵਾਂ ਦੇ ਹਵਾਲੇ ਨਾਲ ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਜੀਵਨ, ਸਭਿਆਚਾਰ, ਸੋਚ ਅਤੇ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਸਮਝਣ ਦੇ ਯੋਗ ਹੋਣਗੇ।
BH-PBI-CC- 501.3	ਵਿਦਿਆਰਥੀ ਪਰਵਾਸੀ ਅਤੇ ਪਰਵਾਸੀ ਚੇਤਨਾ ਨਾਲ ਸਬੰਧਤ ਵਿਭਿੰਨ ਸੰਕਲਪਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-CC- 501.4	ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਜ਼ਰੀਏ ਪਰਵਾਸੀ ਪੰਜਾਬੀਆਂ ਦੀ ਅੰਤਰਮਨ ਸੰਵੇਦਨਾ ਨੂੰ ਸਮਝਣ ਦੀ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ : ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ

1.1 ਪਰਵਾਸ ਦਾ ਸੰਕਲਪ

1.2 ਪਰਵਾਸ ਦੇ ਮਸਲੇ

1.3 ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੀਆਂ ਵੰਨਗੀਆਂ

1.4 ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ : ਦਸ਼ਾ ਅਤੇ ਦਿਸ਼ਾ

ਯੂਨਿਟ ਦੂਜਾ

2. ਸੁਖਪਾਲ, ***ਚੁੱਪ ਚੁਪੀਤੇ ਚੇਤਰ ਚੜ੍ਹਿਆ***, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2016

2.1 ਕਵਿਤਾ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਤੱਤ ਅਤੇ ਰੂਪਾਕਾਰਕ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

2.2 ਪਰਵਾਸੀ ਚੇਤਨਾ

2.3 ਕਾਵਿ ਕਲਾ

2.4 ਵਿਹਾਰਕ ਸਮੀਖਿਆ

2.5 ਕਾਵਿ ਸਰੋਕਾਰ

ਯੂਨਿਟ ਤੀਜਾ

3. ਸੰਤੋਖ ਧਾਲੀਵਾਲ, ***'ਤੇ ਕਾਨੂੰ ਮਰ ਗਿਆ***, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ

3.1 ਕਹਾਣੀ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਤੱਤ ਅਤੇ ਰੂਪਾਕਾਰਕ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

3.2 ਵਿਸ਼ਾ ਵਸਤੂ

3.3 ਕਥਾ ਜੁਗਤਾਂ

3.4 ਪਰਵਾਸੀ ਚੇਤਨਾ

3.5 ਨਸਲਵਾਦ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਅਕਾਲ ਅੰਮ੍ਰਿਤ ਕੌਰ, **ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਗਲਪ : ਨਵੇਂ ਪਾਸਾਰ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ
2. ਸ. ਪ. ਸਿੰਘ, **ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ,** ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ
3. ਹਰਚੰਦ ਸਿੰਘ ਬੇਦੀ, **ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਗਲਪ : ਨਸਲਵਾਦੀ ਪਰਿਪੇਖ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ,
4. ਹਰਚੰਦ ਸਿੰਘ ਬੇਦੀ**, ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਮਸਲੇ**, ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ, 2004
5. ਜੁਗਿੰਦਰ ਸਿੰਘ ਨਹਿਰੂ, **ਪੰਜਾਬੀ ਕੈਨੇਡੀਅਨ ਸਾਹਿਤ,** ਲੋਕਾਇਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 1998
6. ਦੇਵਿੰਦਰ ਚੰਦਨ, **ਬਰਤਾਨਵੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਮਸਲੇ,** ਸੂਰਜ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ
7. ਪ੍ਰੇਮ ਪ੍ਰਕਾਸ਼ ਸਿੰਘ ਧਾਲੀਵਾਲ, **ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ : ਮੁੱਲ ਤੇ ਮੁਲਾਂਕਣ,** ਮਦਾਨ ਪਬਲੀਕੇਸ਼ਨ, ਪਟਿਆਲਾ, 1999
8. ਬਲਕਾਰ ਸਿੰਘ, **ਡਾਇਸਪੋਰਾ ਅਤੇ ਪੰਜਾਬੀ ਬਿਰਤਾਂਤ,** ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2005
9. ਰਾਜਿੰਦਰ ਸਿੰਘ ਲਾਂਬਾ, **ਖੋਜ ਪਤ੍ਰਿਕਾ (ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਵਿਸ਼ੇਸ਼ ਅੰਕ) ਅੰਕ 40,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2000
10. ਰਾਜਿੰਦਰ ਪਾਲ ਸਿੰਘ (ਸੰਪਾ.), **ਪੰਜਾਬੀ ਡਾਇਸਪੋਰਾ ਸਾਹਿਤ ਅਤੇ ਸਭਿਆਚਾਰ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2011

Mapping Matrix of Course BH-PBI-CC- 501

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-CC- 501) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-CC- 501

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-CC- 501.1	3	3	3	2	3	2	3	3
BH-PBI-CC- 501.2	3	3	3	2	3	2	3	3
BH-PBI-CC- 501.3	3	3	3	2	3	2	3	3
BH-PBI-CC- 501.4	3	3	3	2	3	2	3	3
Average	3	3	3	2	3	2	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-CC- 501) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-CC- 501

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-CC- 501.1	3	3	3	3
BH-PBI-CC- 501.2	3	3	3	3
BH-PBI-CC- 501.3	3	3	3	3
BH-PBI-CC- 501.4	3	3	3	2
Average	3	3	3	2.75

Semester : V
BH-PBI-CC- 502

ਸਾਹਿਤ ਸਿਧਾਂਤ, ਭਾਰਤੀ ਅਤੇ ਯੂਨਾਨੀ ਕਾਵਿ ਸ਼ਾਸਤਰ
(Sahit Sidhant, Bharti ate Unani Kav Shastar)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਸਾਹਿਤ ਅਤੇ ਸਾਹਿਤ ਸਿਧਾਂਤ ਬਾਰੇ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਭਾਰਤੀ ਕਾਵਿ ਸ਼ਾਸਤਰ ਬਾਰੇ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਯੂਨਾਨੀ ਕਾਵਿ ਸ਼ਾਸਤਰ ਬਾਰੇ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਸਾਹਿਤ ਅਤੇ ਸਾਹਿਤ ਸਿਧਾਂਤ ਨਾਲ ਸਬੰਧਤ ਵੱਖ-ਵੱਖ ਸੰਕਲਪਾਂ ਦਾ ਬੋਧ ਹਾਸਲ ਕਰਾਉਣਾ।
- ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਭਾਰਤੀ ਅਤੇ ਯੂਨਾਨੀ ਕਾਵਿ ਸ਼ਾਸਤਰ ਪ੍ਰਤੀ ਸਮਝ ਪੈਦਾ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-CC- 502.1	ਵਿਦਿਆਰਥੀ ਸਾਹਿਤ ਅਤੇ ਸਾਹਿਤ ਸਿਧਾਂਤ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਕਰਨਗੇ।
BH-PBI-CC- 502.2	ਵਿਦਿਆਰਥੀ ਭਾਰਤੀ ਸਾਹਿਤ ਸਿਧਾਂਤ ਦੇ ਵਿਭਿੰਨ ਸੰਕਲਪਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-CC- 502.3	ਵਿਦਿਆਰਥੀ ਯੂਨਾਨੀ ਸਾਹਿਤ ਸ਼ਾਸਤਰੀਆਂ ਦੇ ਹਵਾਲੇ ਨਾਲ ਸਾਹਿਤ ਸਿਧਾਂਤ ਦੇ ਵਿਭਿੰਨ ਸੰਕਲਪਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-CC- 502.4	ਭਾਰਤੀ ਅਤੇ ਯੂਨਾਨੀ ਕਾਵਿ ਸ਼ਾਸਤਰ ਦੀ ਵਿਸਤ੍ਰਿਤ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਸਾਹਿਤ : ਸਿਧਾਂਤਕ ਪੱਖ
1.1 ਸਾਹਿਤ : ਪਰਿਭਾਸ਼ਾ ਤੇ ਪ੍ਰਕ੍ਰਿਤੀ
1.2 ਸਾਹਿਤ : ਸੂਖ਼ਮ ਕਲਾ
1.3 ਸਾਹਿਤ ਤੇ ਭਾਸ਼ਾ
1.4 ਸਾਹਿਤ ਦਾ ਪ੍ਰਯੋਜਨ

ਯੂਨਿਟ ਦੂਜਾ

2. ਭਾਰਤੀ ਕਾਵਿ ਸ਼ਾਸਤਰ

2.1 ਭਾਰਤੀ ਕਾਵਿ ਸ਼ਾਸਤਰ ਦੇ ਮੁੱਖ ਸਿਧਾਂਤ

2.2 ਰਸ ਸਿਧਾਂਤ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵਰਗੀਕਰਨ

2.3 ਅਲੰਕਾਰ ਸਿਧਾਂਤ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵਰਗੀਕਰਨ

2.4 ਧੁਨੀ ਸਿਧਾਂਤ ਅਤੇ ਸ਼ਬਦ ਸ਼ਕਤੀਆਂ

2.5 ਰੀਤੀ ਸਿਧਾਂਤ : ਪ੍ਰਮੁੱਖ ਸੰਕਲਪ

2.6 ਵਕ੍ਰੋਕਤੀ ਸਿਧਾਂਤ : ਪ੍ਰਮੁੱਖ ਸੰਕਲਪ

2.7 ਔਚਿਤਯ ਸਿਧਾਂਤ : ਮੂਲ ਧਾਰਨਾਵਾਂ

ਯੂਨਿਟ ਤੀਜਾ

3. ਯੂਨਾਨੀ ਕਾਵਿ ਸ਼ਾਸਤਰ

3.1 ਪਲੈਟੋ ਦਾ ਕਾਵਿ ਸਿਧਾਂਤ

3.2 ਅਰਸਤੂ ਦਾ ਤ੍ਰਾਸਦੀ ਸਿਧਾਂਤ

3.3 ਪਲੈਟੋ ਤੇ ਅਰਸਤੂ ਦੀਆਂ ਧਾਰਨਾਵਾਂ ਵਿੱਚ ਅੰਤਰ ਨਿਖੇੜ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਸੁਰਿੰਦਰ ਕੁਮਾਰ ਦਵੇਸ਼ਵਰ, **ਆਧੁਨਿਕ ਸਾਹਿਤ ਆਲੋਚਨਾ : ਸਿਧਾਂਤ ਅਤੇ ਵਿਸ਼ਲੇਸ਼ਣ,** ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2005
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3. ਹਰਿਭਜਨ ਸਿੰਘ, **ਸਾਹਿਤ ਸ਼ਾਸਤਰ,** ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ
4. ਕਿਸ਼ਨ ਸਿੰਘ, **ਸਾਹਿਤ ਦੀ ਸਮਝ,** ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2005
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12. ਰੋਸ਼ਨ ਲਾਲ ਆਹੂਜਾ, **ਸਾਹਿਤ ਸ਼ਾਸਤਰ**, ਲਾਹੌਰ ਬੁੱਕ ਸ਼ਾਪ, ਲੁਧਿਆਣਾ

Mapping Matrix of Course BH-PBI-CC- 502

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-CC- 502) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-CC- 502

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-CC- 502.1	3	2	3	2	3	2	3	3
BH-PBI-CC- 502.2	3	3	3	2	3	2	3	3
BH-PBI-CC- 502.3	3	3	3	2	3	2	3	3
BH-PBI-CC- 502.4	3	2	3	2	3	2	3	3
Average	3	2.5	3	2	3	2	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-CC- 502) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-CC- 502

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-CC- 501.1	3	3	3	3
BH-PBI-CC- 501.2	3	3	3	3
BH-PBI-CC- 501.3	3	3	3	3
BH-PBI-CC- 501.4	3	3	3	2
Average	3	3	3	2.75

Semester : V
BH-PBI-DSE- 503

ਭਾਰਤੀ ਸਾਹਿਤ
(Bharti Sahit)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਸਾਹਿਤ, ਅਨੁਵਾਦ ਅਤੇ ਤੁਲਨਾਤਮਕ ਸਾਹਿਤ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਦਾ ਪਹਿਲਾ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀਆਂ ਕਹਾਣੀਆਂ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਹਾਣੀਆਂ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਹਾਣੀਕਾਰਾਂ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਦਾ ਪਹਿਲਾ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਾਵਲ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਨਾਵਲ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਨਾਵਲਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਭਾਰਤੀ ਸਾਹਿਤ, ਸਾਹਿਤਕਾਰਾਂ ਅਤੇ ਸਾਹਿਤ ਇਤਿਹਾਸ ਨਾਲ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ ਕਰਾਉਣਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-DSE- 503.1	ਵਿਦਿਆਰਥੀ ਅਨੁਵਾਦਿਤ ਅਤੇ ਤੁਲਨਾਤਮਕ ਸਾਹਿਤ ਦੇ ਵਿਭਿੰਨ ਸਿਧਾਂਤਕ ਪਹਿਲੂਆਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-DSE- 503.2	ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦਿਤ ਭਾਰਤੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸ, ਇਸਦੇ ਝੁਕਾਵਾਂ ਅਤੇ ਪ੍ਰਮੁੱਖ ਸਾਹਿਤਕਾਰਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।
BH-PBI-DSE- 503.3	ਵਿਦਿਆਰਥੀਆਂ ਵਿਭਿੰਨ ਭਾਰਤੀ ਸਾਹਿਤਕ ਰਚਨਾਵਾਂ ਦੇ ਤੁਲਨਾਤਮਕ ਅਧਿਐਨ ਰਾਹੀਂ ਭਾਰਤੀ ਸਾਹਿਤ ਦੇ ਵਿਭਿੰਨ ਰੁਝਾਨਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-DSE- 503.4	ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦਿਤ ਭਾਰਤੀ ਸਾਹਿਤ ਦੇ ਮੁੱਖ ਸਰੋਕਾਰਾਂ ਦਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਸਿਧਾਂਤ ਇਤਿਹਾਸ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ

1.1 ਅਨੁਵਾਦ : ਪਰਿਭਾਸ਼ਾ

1.2 ਅਨੁਵਾਦਿਤ ਸਾਹਿਤ ਦੀ ਮਹੱਤਤਾ

1.3 ਤੁਲਨਾਤਮਕ ਅਧਿਐਨ

1.4 ਭਾਰਤੀ ਸਾਹਿਤ ਦੇ ਪ੍ਰਮੁੱਖ ਰੁਝਾਨ

ਯੂਨਿਟ ਦੂਜਾ

2. ਬਲਬੀਰ ਮਾਧੋਪੁਰੀ, (ਅਨੁ. ਅਤੇ ਸੰਪਾ.), ***ਮਿੱਟੀ ਬੋਲਦੀ ਹੈ*** (ਪਹਿਲੀਆਂ ਦਸ ਕਹਾਣੀਆਂ), ਨਵਯੁਗ ਪਬਲਿਸ਼ਰਜ਼, ਦਿੱਲੀ, 2014

2.1 ਵਿਸ਼ੈਗਤ ਅਧਿਐਨ

2.2 ਕਹਾਣੀ ਕਲਾ

2.3 ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ

2.4 ਤੁਲਨਾਤਮਕ ਅਧਿਐਨ

ਯੂਨਿਟ ਤੀਜਾ

3. ਲਵਲੀਨ ਜੌਲੀ (ਅਨੁ.), ***ਸੰਸਕਾਰ*** (ਮੂਲ ਲੇਖਕ ਯੂ. ਆਰ ਅਨੰਤਮੂਰਤੀ), ਸਾਹਿਤ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 1997

3.1 ਵਿਸ਼ੇਗਤ ਸਰੋਕਾਰ

3.2 ਗਲਪੀ ਸੰਗਠਨ

3.3 ਕਥਾਨਕ ਅਤੇ ਪਾਤਰ ਚਿੱਤਰਣ

3.4 ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ

3.5 ਸਮਾਜਿਕ-ਸੰਸਕ੍ਰਿਤਕ ਪਰਿਪੇਖ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਹਰਚਰਨ ਕੌਰ ਅਤੇ ਰਵੇਲ ਸਿੰਘ (ਸੰਪਾ.), ਪੰਜਾਬੀ ਅਤੇ ਭਾਰਤੀ ਸਾਹਿਤ : ਤੁਲਨਾ ਤੋਂ ਸੰਵਾਦ ਤੱਕ, ਪੰਜਾਬੀ ਅਕਾਡਮੀ, ਦਿੱਲੀ, 2002
2. ਸਤਿੰਦਰ ਸਿੰਘ (ਸੰਪਾ.), ਤੁਲਨਾਤਮਕ ਭਾਰਤੀ ਸਾਹਿਤ, ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ, 1990

Mapping Matrix of Course BH-PBI-DSE- 503

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-DSE- 503) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-DSE- 503

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-DSE- 503.1	3	2	3	2	3	2	3	3
BH-PBI-DSE- 503.2	3	3	3	2	3	2	3	3
BH-PBI-DSE- 503.3	3	2	3	2	3	2	3	3
BH-PBI-DSE- 503.4	3	3	3	2	3	2	3	3
Average	3	2.5	3	2	3	2	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-DSE- 503) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-DSE- 503

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-DSE- 503.1	3	2	3	3
BH-PBI-DSE- 503.2	3	3	3	3
BH-PBI-DSE- 503.3	3	3	3	3
BH-PBI-DSE- 503.4	3	3	3	2
Average	3	2.75	3	2.75

Semester : V
BH-PBI-DSE- 504

ਵਿਸ਼ਵ ਸਾਹਿਤ
(Vishav Sahit)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਸਾਹਿਤ, ਵਿਸ਼ਵ ਸਾਹਿਤ ਅਤੇ ਤੁਲਨਾਤਮਕ ਸਾਹਿਤ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਦਾ ਪਹਿਲਾ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀਆਂ ਕਵਿਤਾਵਾਂ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵੀਆਂ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਦਾ ਪਹਿਲਾ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਾਟਕ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਨਾਟਕ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਨਾਟਕਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਵਿਸ਼ਵ ਸਾਹਿਤ, ਸਾਹਿਤਕਾਰਾਂ ਅਤੇ ਸਾਹਿਤ ਇਤਿਹਾਸ ਨਾਲ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ ਕਰਾਉਣਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-DSE- 504.1	ਵਿਦਿਆਰਥੀ ਅਨੁਵਾਦਿਤ ਅਤੇ ਤੁਲਨਾਤਮਕ ਸਾਹਿਤ ਦੇ ਵਿਭਿੰਨ ਸਿਧਾਂਤਕ ਪਹਿਲੂਆਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-DSE- 504.2	ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦਿਤ ਵਿਸ਼ਵ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸ, ਇਸਦੇ ਝੁਕਾਵਾਂ ਅਤੇ ਪ੍ਰਮੁੱਖ ਸਾਹਿਤਕਾਰਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।
BH-PBI-DSE- 504.3	ਵਿਦਿਆਰਥੀਆਂ ਵਿਭਿੰਨ ਵਿਸ਼ਵ ਸਾਹਿਤਕ ਰਚਨਾਵਾਂ ਦੇ ਤੁਲਨਾਤਮਕ ਅਧਿਐਨ ਰਾਹੀਂ ਵਿਸ਼ਵ ਸਾਹਿਤ ਦੇ ਵਿਭਿੰਨ ਰੁਝਾਨਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-DSE- 504.4	ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦਿਤ ਵਿਸ਼ਵ ਸਾਹਿਤ ਦੇ ਮੁੱਖ ਸਰੋਕਾਰਾਂ ਦਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਸਿਧਾਂਤ, ਇਤਿਹਾਸ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ
1.1 ਸਾਹਿਤ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਸਰੂਪ
1.2 ਤੁਲਨਾਤਮਕ ਸਾਹਿਤ ਦਾ ਸੰਕਲਪ
1.3 ਵਿਸ਼ਵ ਸਾਹਿਤ ਵਿੱਚ ਨਾਟਕ ਦੀ ਪਰੰਪਰਾ
1.4 ਵਿਸ਼ਵ ਸਾਹਿਤ ਵਿੱਚ ਕਵਿਤਾ ਦੀ ਪਰੰਪਰਾ

ਯੂਨਿਟ ਦੂਜਾ

2. ਹਰਭਜਨ ਸਿੰਘ ਹੁੰਦਲ, ਵਿਸ਼ਵ ਕਵੀ – ਬ੍ਰੈਖ਼ਤ ਤੇ ਲੋਰਕਾ : ਚੋਣਵੀਂ ਕਵਿਤਾ, ਐੱਚ. ਕੇ. ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ (ਦੋਹਾਂ ਦੀਆਂ ਪੰਜ ਪੰਜ ਪਹਿਲੀਆਂ ਕਵਿਤਾਵਾਂ)
2.1 ਪਾਠਗਤ ਅਧਿਐਨ
2.2 ਬ੍ਰੈਖ਼ਤ ਦੀ ਕਾਵਿ-ਕਲਾ
2.3 ਲੋਰਕਾ ਦੀ ਕਾਵਿ-ਕਲਾ
2.4 ਵਿਚਾਰਧਾਰਾ ਅਤੇ ਕਾਵਿ ਜੁਗਤਾਂ

ਯੂਨਿਟ ਤੀਜਾ

3. ਸੁਰਜੀਤ ਪਾਤਰ (ਅਨੁ.) ***ਅੱਗ ਦੇ ਕਲੰਗਿ***, ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2002
3.1 ਵਿਸ਼ੈਗਤ ਅਧਿਐਨ
3.2 ਨਾਟ ਜੁਗਤਾਂ
3.3 ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ
3.4 ਡਾਇਲਾਗ ਅਤੇ ਪਾਤਰ ਉਸਾਰੀ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਹਰਚਰਨ ਕੌਰ ਅਤੇ ਰਵੇਲ ਸਿੰਘ (ਸੰਪਾ.), ਪੰਜਾਬੀ ਅਤੇ ਭਾਰਤੀ ਸਾਹਿਤ : ਤੁਲਨਾ ਤੋਂ ਸੰਵਾਦ ਤੱਕ, ਪੰਜਾਬੀ ਅਕਾਡਮੀ, ਦਿੱਲੀ, 2002
2. ਸਤਿੰਦਰ ਸਿੰਘ (ਸੰਪਾ.), ਤੁਲਨਾਤਮਕ ਭਾਰਤੀ ਸਾਹਿਤ, ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ, 1990

Mapping Matrix of Course BH-PBI-DSE- 504

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-DSE- 504) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-DSE- 504

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-DSE- 503.1	3	2	3	2	3	2	3	3
BH-PBI-DSE- 503.2	3	3	3	2	3	2	3	3
BH-PBI-DSE- 503.3	3	3	3	2	3	2	3	3
BH-PBI-DSE- 503.4	3	3	3	2	3	2	3	3
Average	3	2.75	3	2	3	2	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-DSE- 504) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-DSE- 504

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-DSE- 503.1	3	3	3	3
BH-PBI-DSE- 503.2	3	3	3	3
BH-PBI-DSE- 503.3	3	3	3	3
BH-PBI-DSE- 503.4	3	3	3	2
Average	3	3	3	2.75

Semester : V

BH-PBI-GE- 505

ਹਰਿਆਣਾ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ

(Haryana Da Punjabi Sahit Ate Viharak Punjabi)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀਆਂ ਕਵਿਤਾਵਾਂ ਦੇ ਵਿਸ਼ੇ/ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਵਿਤਾਵਾਂ ਦੀ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਦੋਵੇਂ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰ ਦੇ ਹੋਣਗੇ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਾਵਲ ਦੇ ਵਿਸ਼ੇ/ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਨਾਵਲ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਨਾਵਲਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਦੋਵੇਂ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਦੇ ਪੰਜ ਉਪ-ਭਾਗ ਹਨ। ਉਪ-ਭਾਗ ਪਹਿਲਾ ਵਿੱਚ ਪੰਜਾਬੀ ਸੁਰ ਪ੍ਰਬੰਧ, ਉਪ-ਭਾਗ ਦੂਜਾ ਵਿੱਚ ਭਾਸ਼ਾ ਅਤੇ ਉਪਭਾਸ਼ਾ, ਉਪਭਾਗ ਤੀਜਾ ਵਿੱਚ ਪੰਜਾਬੀ ਦੀਆਂ ਉਪਭਾਸ਼ਾਵਾਂ, ਉਪਭਾਗ ਚੌਥਾ ਵਿੱਚ ਪੁਆਧੀ ਉਪਭਾਸ਼ਾ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ਅਤੇ ਉਪਭਾਗ ਪੰਜਵਾਂ ਵਿੱਚ ਪੁਆਧੀ ਸ਼ਬਦਾਵਲੀ (ਦਿੱਤੇ ਗਏ ਦਸ ਸ਼ਬਦਾਂ ਵਿੱਚੋਂ ਛੇ ਦੇ ਮਾਝੀ ਜਾਂ ਮਲਵਈ ਰੂਪ) ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਉਪ-ਭਾਗ ਛੇ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਹਰਿਆਣਾ ਦੇ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸ, ਇਸਦੇ ਝੁਕਾਵਾਂ ਅਤੇ ਪ੍ਰਮੁੱਖ ਸਾਹਿਤਕਾਰਾਂ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ।
- ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੇ ਅਧਿਐਨ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਪ੍ਰਤੀ ਵਿਸ਼ੇਸ਼ ਸਮਝ ਪੈਦਾ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-GE- 505.1	ਹਰਿਆਣਾ ਵਿਚਲੇ ਵੱਖ-ਵੱਖ ਸਾਹਿਤਕਾਰਾਂ ਦੀਆਂ ਰਚਨਾਵਾਂ ਦੇ ਅਧਿਐਨ ਦੁਆਰਾ ਸਾਹਿਤ ਅਧਿਐਨ ਦੀ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।
BH-PBI-GE- 505.2	ਹਰਿਆਣਾ ਦੇ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਅਧਿਐਨ ਦੁਆਰਾ ਹਰਿਆਣਾ ਵਿੱਚ ਵਸਦੇ ਪੰਜਾਬੀ ਲੋਕਾਂ ਦੀ ਜੀਵਨ-ਜਾਚ ਨੂੰ ਸਮਝਣ ਦੀ ਸੂਝ ਬਣੇਗੀ।
BH-PBI-GE- 505.3	ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਖੇਤਰੀ ਸਾਹਿਤ ਨੂੰ ਪੜ੍ਹਨ, ਸਮਝਣ ਦੀ ਰੁਚੀ ਪੈਦਾ ਹੋਵੇਗੀ।
BH-PBI-GE- 505.4	ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੀ ਪੜ੍ਹਾਈ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਸੰਰਚਨਾ ਅਤੇ ਵਰਤੋਂ ਵਿਹਾਰ ਬਾਰੇ ਸਮਝ ਅਤੇ ਮੁਹਾਰਤ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਡਾ. ਰਜਿੰਦਰ ਸਿੰਘ ਭੱਟੀ, ***ਤੇਰੇ ਮੇਰੇ ਬੋਲ***, ਨਵਰੰਗ ਪਬਲੀਕੇਸ਼ਨ, ਸਮਾਣਾ, 2017

1.1 ਕਵਿਤਾ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤਕਨੀਕ

1.2 ਹਰਿਆਣਾ ਦੀ ਪੰਜਾਬੀ ਕਵਿਤਾ : ਜਨਮ ਤੇ ਸੰਖੇਪ ਇਤਿਹਾਸ

1.3 ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ

1.4 ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ

1.5 ਮੂਲ ਸਰੋਕਾਰ

1.6 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਦੂਜਾ

2. ਸੋਹਣ ਸਿੰਘ ਹੰਸ, ***ਕਾਲੀ ਕਥਾ***, ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ

2.1 ਹਰਿਆਣਾ ਦਾ ਪੰਜਾਬੀ ਨਾਵਲ : ਜਨਮ ਅਤੇ ਸੰਖੇਪ ਇਤਿਹਾਸ

2.2 ਵਿਸ਼ਾ ਵਸਤੂ ਅਤੇ ਸਰੋਕਾਰ

2.3 ਆਲੋਚਨਾਤਕ ਅਧਿਐਨ

2.4 ਪਾਤਰ ਵਿਧਾਨ

2.5 ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ

2.6 ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ

ਯੂਨਿਟ ਤੀਜਾ

3. ਵਿਹਾਰਕ ਪੰਜਾਬੀ

3.1 ਭਾਸ਼ਾ ਅਤੇ ਉਪਭਾਸ਼ਾ

3.2 ਪੰਜਾਬੀ ਦੀਆਂ ਉਪਭਾਸ਼ਾਵਾਂ

3.3 ਪੁਆਧੀ ਉਪਭਾਸ਼ਾ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

3.4 ਪੁਆਧੀ ਸ਼ਬਦਾਵਲੀ (1●● ਸ਼ਬਦ ਨਾਲ ਨੱਥੀ ਹਨ)

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਅਮਰਜੀਤ ਸਿੰਘ ਕਾਂਗ, **ਹਰਿਆਣਾ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ**, ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ
2. ਅਮਰਜੀਤ ਸਿੰਘ ਕਾਂਗ ਅਤੇ ਹਿੰਮਤ ਸਿੰਘ ਸੋਢੀ (ਸੰਪਾ.), **ਹਰਿਆਣਾ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ ਨੂੰ ਯੋਗਦਾਨ** ਹਰਿਆਣਾ ਸਾਹਿਤ ਅਕਾਦਮੀ, ਚੰਡੀਗੜ੍ਹ
4. ਹਰਕੀਰਤ ਸਿੰਘ, **ਪੰਜਾਬੀ ਸ਼ਬਦ ਰੂਪ ਅਤੇ ਸ਼ਬਦ ਜੋੜ ਕੋਸ਼**, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
5. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ, **ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਣ,** ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ, ਪਟਿਆਲਾ, 2006
6. ਗੁਰਦਿਆਲ ਸਿੰਘ , **ਹਰਿਆਣਾ ਦੀ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦਾ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐ**ਨ, ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ, 2011

ਪੁਆਧੀ ਸ਼ਬਦ

1.	ਛੋਕਰੀ	ਕੁੜੀ
2.	ਛੋਕਰਾ	ਮੁੰਡਾ
3.	ਮ੍ਹਾਰੇ	ਸਾਡੇ
4.	ਮ੍ਹਾਰਾ	ਸਾਡਾ
5.	ਥ੍ਹਾਰਾ	ਤੁਹਾਡਾ
6.	ਥ੍ਹਾਰੇ	ਤੁਹਾਡੇ
7.	ਥ੍ਹਮੇਂ	ਤੁਸੀਂ (ਬਹੁਵਚਨ)
8.	ਬਾਰ	ਦਰਵਾਜ਼ਾ
9.	ਬਾਰ	ਦਿਨ
10.	ਖੀਸ	ਬਉਲ਼ੀ
11.	ਕਟੜੂ	ਕੱਟੀ/ ਕੱਟਾ
12.	ਸੰਝ	ਸ਼ਾਮ/ ਆਥਣ ਵੇਲਾ
13.	ਭਾਪਾ	ਬਾਪੂ/ ਪਿਓ
14.	ਬਾਬਾ	ਦਾਦਾ
15.	ਡੌਲ਼	ਵੱਟ
16.	ਬੌਲ਼	ਝੱਲ/ ਕਮਲ
17.	ਜੂਣ	ਵੇੜ
18.	ਤੰਦਾ	ਲੰਮੀ ਵੇੜ
19.	ਗੁਆਰਾ	ਗੁਹਾਰਾ
20.	ਪਾਥੀ	ਪਾਥੀ
21.	ਮੋਗਰੀ	ਥਾਪੀ
22.	ਦਿਨਛਿਪਾ	ਸੰਝ/ ਦਿਨਢਲੇ
23.	ਸੌਣ	ਸਾਉਣ
24.	ਰੌਣ	ਰਾਵਣ
25.	ਭਾਈ	ਭਰਾ/ ਵੀਰ
26.	ਉਨਕੇ	ਉਹਨਾਂ ਦੇ
27.	ਸ੍ਹਿਆਰ	ਹੁਸ਼ਿਆਰ/ ਚਲਾਕ
28.	ਡਾਮਾ	ਉਡਾਉਣਾ/ ਉਡਾਉਂਦਾ
29.	ਤਸਲਾ	ਬੱਠਲ
30.	ਲੇਹੈ/ ਲੇਬਾ	ਲੈਂਦਾ/ ਲੈਂਦੀ
31.	ਦੇਹੈ	ਦਿੰਦਾ ਹੈ/ ਦਿੰਦੀ ਹੈ
32.	ਊਐਂ	ਐਵੇਂ
33.	ਸੂਹਰ	ਚੱਜ

34.	ਛਿਲਾ	ਜਣੇਪਾ
35.	ਜਿਤਰਾਂ/ ਜੀਕਣ	ਜਿਵੇਂ/ ਜਿਸ ਤਰ੍ਹਾਂ
36.	ਬਲੈਤੀ	ਵਲੈਤੀ
37.	ਸਤਾਜ	ਉਸਤਾਦ/ਗੁਰੂ
38.	ਸਤਾਬੀ	ਛੇਤੀ/ ਜਲਦੀ
39.	ਕਸੋਭਲਾ	ਭੈੜਾ/ ਕਰੂਪ
4●.	ਤੰਦਾ/ ਦੰਦਾ	ਹੱਦ (ਪਿੰਡ ਦੀ ਹੱਦ)
41.	ਤਲ਼ਾ	ਹੇਠਾਂ/ ਥੱਲੇ
42.	ਤਲੌਅ/ਛੱਪੜ/ਜੌਹੜ/ ਟ੍ਰੋਭਾ	ਤਲਾਅ/ਛੱਪੜ
43.	ਖਾਲ਼	ਖਾਲ਼
44.	ਪਟੁਆਰੀ	ਪਟਵਾਰੀ
45.	ਗਠੇ	ਗੰਡੇ/ ਪਿਆਜ
46.	ਲ੍ਹਾਸਣ	ਲ੍ਹਸਣ
47.	ਲੰਬਾਰੀ	ਅਲਮਾਰੀ
48.	ਲ੍ਹੰਡਾ	ਕੜਾਹੀ
49.	ਜ੍ਹਾਰ	ਹਜਾਰ
5●.	ਕੂਆ	ਖੂਹ
51.	ਬ੍ਹੈਗਰੂ	ਵਾਹਿਗੁਰੂ
52.	ਤੀਮੀਂ	ਤੀਵੀਂ/ ਜਨਾਨੀ
53.	ਮ੍ਹੈਸ	ਮੱਝ
54.	ਗੈਂ	ਗਊ/ ਗਾਂ
55.	ਬ੍ਹੈੜੀ	ਗਾਂ (ਅਣਸੂਈ)
56.	ਬਛੀਕਾ	ਵੱਛਾ
57.	ਪੱਲੀ	ਪੱਲੀ
58.	ਕੈਬਟੀ	2●/25 ਫੁੱਟ ਡੂੰਘੀ ਬੰਬੀ
59.	ਮੌਸ	ਮੱਸਿਆ
6●.	ਸਕਰਾਂਤ	ਸੰਗਰਾਂਦ
61.	ਝ੍ਹੱਕਰੀਆਂ	ਇੱਕ ਤਰ੍ਹਾਂ ਦਾ ਤਿਉਹਾਰ/ ਅਹੋਈ ਅਸ਼ਟਮੀ
62.	ਗ੍ਹਰਬੜੇ	ਵਾਲਮੀਕ ਜੈਯੰਤੀ ਜਿਸ ਦਿਨ (ਰਾਤ ਨੂੰ) ਲੋਕ ਮਿੱਟੀ ਦੇ ਮੋਰੀਆਂ ਕੁੱਜਿਆਂ ਵਿੱਚ ਦੀਵੇ ਬਾਲ਼ ਕੇ ਮੱਥਾ ਟੇਕਦੇ ਹਨ
63.	ਤ੍ਹਾਤੜੇ	ਬਹਾਨੇ/ ਉਸਟੰਡ
64.	ਤਨੂੰ	ਤੈਨੂੰ
65.	ਮ੍ਹਾਨੂੰ	ਸਾਨੂੰ
66.	ਗਾਤ	ਪਿੰਡਾ/ ਸਰੀਰ
67.	ਗੋਹਰ/ ਗ੍ਹੋਰੀ	ਕੱਚਾ ਪਹਾ/ ਪਹੀ
68.	ਰੜਾਟ/ ਰ੍ਹਾਟ	ਚੀਕਾਂ/ ਰੌਲਾ

69.	ਤੁਰਬਤ	ਸਮਾਧ
7●.	ਲਬਾ	ਨੇੜੇ/ ਕੋਲ
71.	ਨੀਮਾਂ	ਨਿਵਾਣ/ ਥੱਲੇ
72.	ਤਾਗਤ	ਤਾਕਤ/ ਜ਼ੋਰ
73.	ਜਿੱਕਰ	ਜਿਵੇਂ/ ਜਿੱਦਾਂ
74.	ਮਬੈਲ	ਮੋਬਾਇਲ
75.	ਗੈਲ	ਨਾਲ
76.	ਖ਼੍ਰਾਸਾ/ ਖ਼੍ਰਾਸੀ	ਜਿਆਦਾ
77.	ਗੌਅ/ ਗੌਂ	ਪਿੰਡ
78.	ਯੋਹ	ਇਹ
79.	ਕਹਾਂ	ਕਿੱਥੇ
8●.	ਜਹਾ	ਜਾਂਦਾ
81.	ਆਬਾ	ਆਉਂਦਾ
82.	ਜਾਡਾ	ਠੰਡ/ ਸਿਆਲ
83.	ਕਾਮਜਾਬ/ ਕਾਮਆਬ	ਕਾਮਯਾਬ/ ਸਫ਼ਲ
84.	ਭ੍ਰਾਜੀ	ਸਬਜੀ/ ਵਿਆਹ ਵਾਲੀ ਭਾਜੀ
85.	ਦੈਹੈਂਗੇ	ਦੇਵਾਂਗੇ
86.	ਲੈਹੈਂਗੇ	ਲਵਾਂਗੇ
87.	ਇਬ	ਹੁਣ
88.	ਕਦਨੂੰ	ਕਦੋਂ
89.	ਬੂਆ	ਭੂਆ
9●.	ਗੋਖੜ	ਗਾਂ
91.	ਕਨੀ	ਵੱਗ (ਮੱਝਾਂ, ਗਾਵਾਂ ਦਾ)
93.	ਜੰਨ	ਜੰਞ/ ਬਰਾਤ
94.	ਬਾਸਤਾ	ਲਈ
95.	ਲੰਬੜਦਾਰ	ਨੰਬਰਦਾਰ
96.	ਮ੍ਹੋਤਬਰ	ਆਗੂ/ ਮੌਜਿਜ਼
97.	ਤੁਰ੍ਹਲਾ	ਟ੍ਹੌਰਾ (ਪੱਗ ਦਾ)
98.	ਸਾਫ਼ਾ	ਪੱਗ
99.	ਟਰੈਗਟਰ	ਟ੍ਰੈਕਟਰ
1●●.	ਫੱਬਾ	ਸਜਦਾ/ ਜਚਦਾ

(ਨੋਟ : ਪੁਆਧੀ ਸ਼ਬਦਾਂ ਦਾ ਇਹ ਸੰਗ੍ਰਹਿ ਲਖਬੀਰ ਸਿੰਘ ਲੈਕਚਰਾਰ (ਪੰਜਾਬੀ), ਸਰਕਾਰੀ ਹਾਈ ਸਕੂਲ, ਉਦੈਪੁਰ, ਜ਼ਿਲ੍ਹਾ ਅੰਬਾਲਾ ਵੱਲੋਂ ਪ੍ਰਾਪਤ ਹੋਇਆ)

Mapping Matrix of Course BH-PBI-GE- 505

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-GE- 505) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-GE- 505

CO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**
BH-PBI-GE- 505.1	**3**	**3**	**3**	**2**	**3**	**2**	**3**	**3**
BH-PBI-GE- 505.2	**3**	**3**	**3**	**2**	**3**	**2**	**3**	**3**
BH-PBI-GE- 505.3	**3**	**3**	**3**	**2**	**3**	**2**	**3**	**3**
BH-PBI-GE- 505.4	**3**	**3**	**3**	**2**	**3**	**2**	**3**	**3**
Average	**3**	**3**	**3**	**2**	**3**	**2**	**3**	**3**

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-GE- 505) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-GE- 505

CO	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**
BH-PBI-GE- 505.1	**3**	**3**	**3**	**3**
BH-PBI-GE- 505.2	**3**	**3**	**3**	**3**
BH-PBI-GE- 505.3	**3**	**3**	**3**	**3**
BH-PBI-GE- 505.4	**3**	**3**	**3**	**2**
Average	**3**	**3**	**3**	**2.75**

Semester : VI
BH-PBI-CC- 601

ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ
(Pakistani Punjabi Sahit)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਦਾ ਪਹਿਲਾ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਕਾਵਿ ਪੁਸਤਕ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵੀਆਂ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਦਾ ਪਹਿਲਾ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀਆਂ ਕਹਾਣੀਆਂ ਦੇ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ/ ਵਿਸ਼ੇ/ ਸਮੱਸਿਆ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਹਾਣੀਆਂ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਹਾਣੀਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਦਾ ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸ, ਇਸਦੇ ਝੁਕਾਵਾਂ ਅਤੇ ਪ੍ਰਮੁੱਖ ਸਾਹਿਤਕਾਰਾਂ ਨਾਲ ਪਰਿਚੈ ਕਰਾਉਣਾ ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-CC- 601.1	ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਮੁੱਖ ਸਰੋਕਾਰਾਂ ਨਾਲ ਜਾਣ-ਪਛਾਣ ਹੋਵੇਗੀ।
BH-PBI-CC- 601.2	ਵਿਦਿਆਰਥੀ ਪਾਕਿਸਤਾਨੀ ਸਾਹਿਤਕਾਰਾਂ ਦੀਆਂ ਰਚਨਾਵਾਂ ਦੇ ਹਵਾਲੇ ਨਾਲ ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਜੀਵਨ, ਸਭਿਆਚਾਰ, ਸੋਚ ਅਤੇ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਸਮਝਣ ਦੇ ਯੋਗ ਹੋਣਗੇ।
BH-PBI-CC- 601.3	ਵਿਦਿਆਰਥੀ ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਵਿਭਿੰਨ ਸੰਕਲਪਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-CC- 601.4	ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਜ਼ਰੀਏ ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀਆਂ ਦੀ ਅੰਤਰਮਨ ਸੰਵੇਦਨਾ ਨੂੰ ਸਮਝਣ ਦੀ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ : ਸਿਧਾਂਤ, ਇਤਿਹਾਸ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ

1.1 ਸ਼ਾਹਮੁਖੀ ਅਤੇ ਗੁਰਮੁਖੀ ਲਿੱਪੀ ਦਾ ਮਸਲਾ

1.2 ਵੰਡ ਦੇ ਆਧਾਰ

1.3 ਪਾਕਿਸਤਾਨੀਅਤ ਦਾ ਸੰਕਲਪ

1.4 ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ : ਇਤਿਹਾਸ ਤੇ ਪ੍ਰਵਿਰਤੀਆਂ

1.5 ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਨਵੇਂ ਰੁਝਾਨ

ਯੂਨਿਟ ਦੂਜਾ

2. ਮਨਜੀਤ ਸਿੰਘ ਅਤੇ ਰਣਬੀਰ ਸਿੰਘ, ***ਕਾਵਿ-ਕਣੀਆਂ : ਵਾਘਿਓਂ ਪਾਰ ਦੀਆਂ***, ਮਨਪ੍ਰੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ, 2011

2.1 ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਕਵਿਤਾ : ਸੰਖੇਪ ਇਤਿਹਾਸ

2.2 ਵਿਸ਼ਾ ਪੱਖ

2.3 ਵਿਚਾਰਧਾਰਾ

2.4 ਕਲਾਤਮਕ ਪੱਖ

2.5 ਸਭਿਆਚਾਰਕ ਪੱਖ

ਯੂਨਿਟ ਤੀਜਾ

3. ਮਕਸੂਦ ਸਾਕਿਬ, ***ਤੂੰ ਘਰ ਚਲਾ ਜਾ***, ਸੰਗਮ ਪਬਲੀਕੇਸ਼ਨ, 2018

3.1 ਵਿਸ਼ੇਗਤ ਸਰੋਕਾਰ

3.2 ਕਥਾਤਮਕ ਜੁਗਤਾਂ

3.3 ਬਿਰਤਾਂਤਕ ਵਿਧੀਆਂ

3.4 ਸਮਾਜਿਕ ਸਰੋਕਾਰ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਅਜਮੇਰ ਸਿੰਘ (ਸੰਪਾ.), **ਖੋਜ ਪਤ੍ਰਿਕਾ (ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਵਿਸ਼ੇਸ਼ ਅੰਕ) ਅੰਕ 37,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2000
2. ਇੰਦਰਪਾਲ ਕੌਰ (ਸੰਪਾ.) , **ਸ਼ਬਦ ਬੂੰਦ (ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਵਿਸ਼ੇਸ਼ ਅੰਕ),** ਹਰਿਆਣਾ ਪੰਜਾਬੀ ਸਾਹਿਤ ਅਕਾਦਮੀ, ਪੰਚਕੂਲਾ
3. ਸਤਿੰਦਰ ਸਿੰਘ ਨੂਰ ਅਤੇ ਰਵੇਲ ਸਿੰਘ (ਸੰਪਾ.), **ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ**, ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 2001
4. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ, **ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ : ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ,** ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ, 1998
5. ਕਰਨੈਲ ਸਿੰਘ ਥਿੰਦ, **ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਸੰਖੇਪ ਜਾਇਜ਼ਾ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2006
6. ਗੁਰਚਰਨ ਸਿੰਘ ਮਹਿਤਾ, **ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ : ਇੱਕ ਪਰਿਚਯ ਇੱਕ ਜਾਇਜ਼ਾ,** ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ, 1998
7. ਜਤਿੰਦਰ ਪਾਲ ਸਿੰਘ, **ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਗਲਪ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ, 2001

Mapping Matrix of Course BH-PBI-CC- 601

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-CC- 601) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-CC- 601

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-CC- 601.1	3	2	3	2	3	2	3	3
BH-PBI-CC- 601.2	3	3	3	2	3	2	3	3
BH-PBI-CC- 601.3	3	3	3	2	3	2	3	3
BH-PBI-CC- 601.4	3	3	3	2	3	2	3	3
Average	3	2.75	3	2	3	2	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-CC- 601) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-CC- 601

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-CC- 601.1	3	2	3	3
BH-PBI-CC- 601.2	3	3	3	3
BH-PBI-CC- 601.3	3	3	3	3
BH-PBI-CC- 601.4	3	3	3	2
Average	3	2.75	3	2.75

Semester : VI

BH-PBI-CC- 602

ਪੰਜਾਬੀ ਆਲੋਚਨਾ : ਸਿਧਾਂਤ ਤੇ ਵਿਹਾਰ

(Punjabi Aalochana : Sidhant ate Vihaar)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਪੰਜਾਬੀ ਆਲੋਚਨਾ ਦੇ ਇਤਿਹਾਸ ਬਾਰੇ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਮਾਰਕਸਵਾਦੀ ਪੰਜਾਬੀ ਆਲੋਚਕਾਂ ਬਾਰੇ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਰੂਪਵਾਦੀ ਪੰਜਾਬੀ ਆਲੋਚਕਾਂ ਬਾਰੇ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਆਲੋਚਨਾ ਦੇ ਇਤਿਹਾਸ ਅਤੇ ਵਿਕਾਸ ਪੜਾਵਾਂ ਦਾ ਬੋਧ ਹਾਸਲ ਕਰਾਉਣਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-CC- 602.1	ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਆਲੋਚਨਾ ਦੇ ਆਰੰਭ ਅਤੇ ਵਿਕਾਸ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।
BH-PBI-CC- 602.2	ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਵਿੱਚ ਵੱਖ-ਵੱਖ ਸਮੇਂ ਪ੍ਰਚੱਲਿਤ ਆਲੋਚਨਾ ਪ੍ਰਣਾਲੀਆਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-CC- 602.3	ਵਿਦਿਆਰਥੀ ਵਿਸ਼ੇਸ਼ ਮਾਰਕਸਵਾਦੀ ਪੰਜਾਬੀ ਆਲੋਚਕਾਂ ਦੇ ਹਵਾਲੇ ਨਾਲ ਮਾਰਕਸਵਾਦੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਚਿੰਤਨ ਬਾਰੇ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-CC- 602.4	ਵਿਦਿਆਰਥੀ ਵਿਸ਼ੇਸ਼ ਰੂਪਵਾਦੀ ਪੰਜਾਬੀ ਆਲੋਚਕਾਂ ਦੇ ਹਵਾਲੇ ਨਾਲ ਪੰਜਾਬੀ ਦੇ ਰੂਪਵਾਦੀ ਸਾਹਿਤ ਚਿੰਤਨ ਬਾਰੇ ਜਾਣੂ ਹੋਣਗੇ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਪੰਜਾਬੀ ਆਲੋਚਨਾ : ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ

1.1 ਪੰਜਾਬੀ ਆਲੋਚਨਾ : ਆਰੰਭ ਤੇ ਵਿਕਾਸ

1.2 ਪੰਜਾਬੀ ਆਲੋਚਨਾ : ਪ੍ਰਮੁੱਖ ਪ੍ਰਵਿਰਤੀਆਂ

1.3 ਪੰਜਾਬੀ ਆਲੋਚਨਾ : ਦਸ਼ਾ ਤੇ ਦਿਸ਼ਾ

ਯੂਨਿਟ ਦੂਜਾ

2. ਪ੍ਰਮੁੱਖ ਪੰਜਾਬੀ ਮਾਰਕਸਵਾਦੀ ਆਲੋਚਕ

2.1 ਸੰਤ ਸਿੰਘ ਸੇਖੋਂ

2.2 ਨਜ਼ਮ ਹੁਸੈਨ ਸੱਯਦ

2.3 ਅਤਰ ਸਿੰਘ

2.4 ਰਵਿੰਦਰ ਰਵੀ

2.5 ਕੇਸਰ ਸਿੰਘ ਕੇਸਰ

2.6 ਪੰਜਾਬੀ ਮਾਰਕਸਵਾਦੀ ਆਲੋਚਨਾ ਦੀਆਂ ਪ੍ਰਾਪਤੀਆਂ ਅਤੇ ਸੀਮਾਵਾਂ

ਯੂਨਿਟ ਤੀਜਾ

3. ਪ੍ਰਮੁੱਖ ਪੰਜਾਬੀ ਰੂਪਵਾਦੀ ਆਲੋਚਕ

3.1 ਹਰਿਭਜਨ ਸਿੰਘ

3.2 ਤਰਲੋਕ ਸਿੰਘ ਕੰਵਰ

3.3 ਸਤਿੰਦਰ ਸਿੰਘ ਨੂਰ

3.4 ਪੰਜਾਬੀ ਰੂਪਵਾਦੀ ਆਲੋਚਨਾ ਦੀਆਂ ਪ੍ਰਾਪਤੀਆਂ ਅਤੇ ਸੀਮਾਵਾਂ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਖੋਜ ਪੱਤ੍ਰਿਕਾ, ਪੰਜਾਬੀ ਆਲੋਚਕ ਵਿਸ਼ੇਸ਼ ਅੰਕ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ

Mapping Matrix of Course BH-PBI-CC- 602

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-CC- 602) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-CC- 602

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-CC- 602.1	3	3	3	2	3	2	3	3
BH-PBI-CC- 602.2	3	3	3	2	3	2	3	3
BH-PBI-CC- 602.3	3	3	3	2	3	2	3	3
BH-PBI-CC- 602.4	3	3	3	2	3	2	3	3
Average	3	3	3	2	3	2	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-CC- 602) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-CC- 602

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-CC- 602.1	3	3	3	3
BH-PBI-CC- 602.2	3	3	3	3
BH-PBI-CC- 602.3	3	3	3	3
BH-PBI-CC- 602.4	3	3	3	2
Average	3	3	3	2.75

Semester : VI

BH-PBI-DSE- 603

ਪੰਜਾਬੀ ਭਾਸ਼ਾ, ਲਿੱਪੀ ਅਤੇ ਪਿੰਗਲ-ਅਰੂਜ਼

(Punjabi Bhasha, Lippi Ate Pingal-Arooz)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਗੁਰਮੁਖੀ ਲਿੱਪੀ ਬਾਰੇ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਪਿੰਗਲ ਤੇ ਅਰੂਜ਼ ਬਾਰੇ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ, ਲਿੱਪੀ ਅਤੇ ਪਿੰਗਲ-ਅਰੂਜ਼ ਦਾ ਮੁੱਢਲਾ ਗਿਆਨ ਪ੍ਰਦਾਨ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-DSE- 603.1	ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਨਿਕਾਸ ਅਤੇ ਵਿਕਾਸ ਪੜਾਵਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-DSE- 603.2	ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਗੁਰਮੁਖੀ ਲਿੱਪੀ ਦੇ ਜਨਮ ਅਤੇ ਵਿਕਾਸ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।
BH-PBI-DSE- 603.3	ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੁਰਮੁਖੀ ਲਿੱਪੀ ਦੀ ਪੰਜਾਬੀ ਲਈ ਉੱਚਿਤਤਾ ਅਤੇ ਪ੍ਰਾਚੀਨਤਾ ਬਾਰੇ ਸਮਝ ਬਣੇਗੀ।
BH-PBI-DSE- 603.4	ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪਿੰਗਲ-ਅਰੂਜ਼ ਦੇ ਨੇਮਾਂ ਦਾ ਸਿਧਾਂਤਕ ਅਤੇ ਵਿਹਾਰਕ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ

1.1 ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਨਿਕਾਸ ਬਾਰੇ ਮਿਲਦੇ ਵਿਭਿੰਨ ਮਤ

1.2 ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਵਿਕਾਸ ਪੜਾਅ

1.3 ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਉੱਤੇ ਪਏ ਦੂਜੀਆਂ ਬੋਲੀਆਂ ਦੇ ਪ੍ਰਭਾਵ

1.4 ਸਵਰ ਅਤੇ ਵਿਅੰਜਨ

ਯੂਨਿਟ ਦੂਜਾ

2. ਗੁਰਮੁਖੀ ਲਿੱਪੀ : ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ

2.1 ਗੁਰਮੁਖੀ ਲਿਪੀ ਦਾ ਜਨਮ ਅਤੇ ਵਿਕਾਸ

2.2 ਗੁਰਮੁਖੀ ਦੀ ਪੰਜਾਬੀ ਲਈ ਉੱਚਿਤਤਾ

2.3 ਗੁਰਮੁਖੀ ਦੀ ਪ੍ਰਾਚੀਨਤਾ

2.4 ਲਗਾਂ ਅਤੇ ਲਗਾਖਰ

ਯੂਨਿਟ ਤੀਜਾ

3. ਪਿੰਗਲ–ਅਰੂਜ਼

3.1 ਪਿੰਗਲ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਲਘੂ ਅਤੇ ਗੁਰੂ

3.2 ਪ੍ਰਮੁੱਖ ਪੰਜਾਬੀ ਛੰਦ : ਕੋਰੜਾ, ਬੈਂਤ, ਦੋਹਰਾ, ਚੌਪਈ

3.3 ਗ਼ਜ਼ਲ਼ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਸਰੂਪ

3.4 ਕਾਫ਼ੀਆ, ਰਦੀਫ਼, ਮਤਲਾ, ਮਕਤਾ, ਸ਼ੇਅਰ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਹਰਕੀਰਤ ਸਿੰਘ, ਭਾਸ਼ਾ ਅਤੇ ਭਾਸ਼ਾ ਵਿਗਿਆਨ, ਲਾਹੌਰ ਬੁੱਕ ਸ਼ਾਪ, ਲੁਧਿਆਣਾ, 1983
2. ਜੇ. ਬੀ. ਸਿੰਘ, ਗੁਰਮੁਖੀ ਲਿਪੀ ਦਾ ਜਨਮ ਤੇ ਵਿਕਾਸ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ, 1972 (ਦੂਜਾ ਐਡੀਸ਼ਨ)
3. ਜੁਗਿੰਦਰ ਸਿੰਘ ਪੁਆਰ, ਭਾਸ਼ਾ ਵਿਗਿਆਨ : ਸੰਕਲਪ ਤੇ ਦਿਸ਼ਾਵਾਂ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਕਾਡਮੀ, ਜਲੰਧਰ, 1988

Mapping Matrix of Course BH-PBI-DSE- 603

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-DSE- 603) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-DSE- 603

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-DSE- 603.1	3	2	2	2	3	2	3	3
BH-PBI-DSE- 603.2	3	2	3	2	3	2	3	3
BH-PBI-DSE- 603.3	3	3	3	2	3	2	3	3
BH-PBI-DSE- 603.4	3	3	3	2	3	2	3	3
Average	**3**	**2.5**	**2.75**	**2**	**3**	**2**	**3**	**3**

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-DSE- 603) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-DSE- 603

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-DSE- 603.1	3	2	3	3
BH-PBI-DSE- 603.2	3	3	3	3
BH-PBI-DSE- 603.3	3	3	3	3
BH-PBI-DSE- 603.4	3	3	3	2
Average	**3**	**2.75**	**3**	**2.75**

Semester : VI

BH-PBI-DSE- 604

ਦੇਸ਼ ਵੰਡ ਅਤੇ ਪੰਜਾਬ ਸੰਤਾਪ ਉੱਪਰ ਪੰਜਾਬੀ ਸਾਹਿਤ
(Desh Vand ate Punjab Santap Uppar Punjabi Sahit)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਦੇਸ਼ ਵੰਡ/ ਪੰਜਾਬ ਸੰਤਾਪ ਦੇ ਕਾਰਨਾਂ, ਪ੍ਰਭਾਵਾਂ ਅਤੇ ਸਬੰਧਤ ਸਾਹਿਤ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਾਵਲ ਨਾਲ ਸਬੰਧਤ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ/ ਵਿਸ਼ਾ/ ਸਮੱਸਿਆ, ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਨਾਵਲ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਨਾਵਲਕਾਰਾ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਪਹਿਲਾ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਕਵਿਤਾ ਦੀ ਪੁਸਤਕ ਨਾਲ ਸਬੰਧਤ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ/ ਵਿਸ਼ਾ/ ਸਮੱਸਿਆ, ਕਾਵਿ ਕਲਾ/ ਕਾਵਿਕ ਜੁਗਤਾਂ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) ਅਤੇ ਇੱਕ ਸੁਆਲ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਸਾਹਿਤ ਦੇ ਮਾਧਿਅਮ ਰਾਹੀਂ ਦੇਸ਼ ਵੰਡ ਅਤੇ ਪੰਜਾਬ ਸੰਤਾਪ ਪਿੱਛੇ ਕਾਰਜਸ਼ੀਲ ਕਾਰਨਾਂ, ਇਨ੍ਹਾਂ ਘਟਨਾਵਾਂ ਦੇ ਪ੍ਰਭਾਵ ਅਤੇ ਨਤੀਜਿਆਂ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-DSE- 604.1	ਵਿਦਿਆਰਥੀ ਦੇਸ਼ ਵੰਡ ਅਤੇ ਪੰਜਾਬ ਸੰਤਾਪ ਪਿੱਛੇ ਕਾਰਜਸ਼ੀਲ ਕਾਰਨਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-DSE- 604.2	ਵਿਦਿਆਰਥੀਆਂ ਇਨ੍ਹਾਂ ਘਟਨਾਵਾਂ ਦੇ ਪ੍ਰਭਾਵ ਅਤੇ ਨਤੀਜਿਆਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-DSE- 604.3	ਦੇਸ਼ ਵੰਡ ਅਤੇ ਪੰਜਾਬ ਸੰਤਾਪ ਨਾਲ ਸਬੰਧਤ ਕੁਝ ਵਿਸ਼ੇਸ਼ ਰਚਨਾਵਾਂ ਦੀ ਪੜ੍ਹਤ ਰਾਹੀਂ ਵਿਦਿਆਰਥੀ ਇਹਨਾਂ ਘਟਨਾਵਾਂ ਦੇ ਪਿਛੋਕੜ ਅਤੇ ਪ੍ਰਭਾਵਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-DSE- 604.4	ਵਿਸ਼ੇਸ਼ ਰਚਨਾਵਾਂ ਦੀ ਪੜ੍ਹਤ ਰਾਹੀਂ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਏਕੇ ਦੀ ਭਾਵਨਾ ਦਾ ਸੰਚਾਰ ਹੋਵੇਗਾ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਦੇਸ਼ ਵੰਡ/ ਪੰਜਾਬ ਸੰਕਟ : ਪ੍ਰਸਥਿਤੀਆਂ, ਕਾਰਨ ਅਤੇ ਨਤੀਜੇ

1.1 ਹਿੰਦ-ਪਾਕਿ ਵੰਡ ਦੇ ਕਾਰਨ

1.2 ਦੇਸ਼-ਵੰਡ ਦੇ ਪ੍ਰਭਾਵ/ ਨਤੀਜੇ

1.3 ਦੇਸ਼-ਵੰਡ ਨਾਲ ਸਬੰਧਤ ਸਾਹਿਤ : ਸੰਖੇਪ ਜਾਇਜ਼ਾ

1.4 ਪੰਜਾਬ ਸੰਕਟ ਦੇ ਬੁਨਿਆਦੀ ਕਾਰਨ

1.5 ਪੰਜਾਬ ਸੰਕਟ ਦੇ ਪ੍ਰਭਾਵ

1.6 ਪੰਜਾਬ ਸਮੱਸਿਆ ਨਾਲ ਸਬੰਧਤ ਸਾਹਿਤ : ਇੱਕ ਜਾਇਜ਼ਾ

ਯੂਨਿਟ ਦੂਜਾ

2. ਅੰਮ੍ਰਿਤਾ ਪ੍ਰੀਤਮ, ***ਪਿੰਜਰ***, ਆਰਸੀ ਪਬਲਿਸ਼ਰਜ਼, ਦਿੱਲੀ

2.1 ਵਿਸ਼ਾ ਵਸਤੂ/ ਮੂਲ ਸਮੱਸਿਆ

2.2 ਦੇਸ਼ ਵੰਡ ਦੀ ਤ੍ਰਾਸਦੀ ਦਾ ਵਰਣਨ

2.3 ਦੇਸ਼ ਵੰਡ ਸਮੇਂ ਔਰਤ ਦੀ ਦੁਰਦਸ਼ਾ

2.4 ਬਿਰਤਾਂਤਕ ਪ੍ਰਬੰਧ

ਯੂਨਿਟ ਤੀਜਾ

3. ਰਮੇਸ਼ ਕੁਮਾਰ, **ਧੌਲ ਧਰਮ ਦਇਆ ਕਾ ਪੂਤ**, ਨੀਲਾਂਬਰ ਪਬਲੀਕੇਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 1986

3.1 ਪੰਜਾਬ ਸੰਕਟ : ਕਾਵਿ ਰੂਪਾਂਤਰਣ

3.2 ਮੂਲ ਸਰੋਕਾਰ

3.3 ਕਾਵਿ ਜੁਗਤਾਂ

3.4 ਬਿੰਬ ਵਿਧਾਨ

3.5 ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਹਰਪ੍ਰੀਤ ਸਿੰਘ ਹੁੰਦਲ, ਪੰਜਾਬ ਸੰਕਟ ਅਤੇ ਪੰਜਾਬੀ ਕਵਿਤਾ, ਮਨਪ੍ਰੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ, 2000
2. ਜੋਗਿੰਦਰ ਸਿੰਘ ਰਾਹੀ, ਮਸਲੇ ਗਲਪ ਦੇ, ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ, 1992
3. ਨਿਰੰਜਨ ਤਸਨੀਮ, ਪੰਜਾਬੀ ਨਾਵਲ ਦਾ ਮੁਹਾਂਦਰਾ, ਪੰਜਾਬੀ ਰਾਈਟਰਜ਼ ਕੋ-ਆਪਰੇਟਿਵ ਸੁਸਾਇਟੀ, ਨਵੀਂ ਦਿੱਲੀ, 1980

Mapping Matrix of Course BH-PBI-DSE- 604

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-DSE- 604) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-DSE- 604

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-DSE- 604.1	3	2	3	2	3	2	3	3
BH-PBI-DSE- 604.2	3	3	3	2	3	2	3	3
BH-PBI-DSE- 604.3	3	3	3	2	3	2	3	3
BH-PBI-DSE- 604.4	3	2	3	2	3	2	3	3
Average	3	2.5	3	2	3	2	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-DSE- 604) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-DSE- 604

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-DSE- 604.1	3	2	3	3
BH-PBI-DSE- 604.2	3	3	3	3
BH-PBI-DSE- 604.3	3	3	3	3
BH-PBI-DSE- 604.4	3	3	3	2
Average	3	2.75	3	2.75

Semester : VI

BH-PBI-GE- 605

ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਨਾਟਕ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ

(Pakistani Punjabi Natak Ate Viharak Punjabi)

ਕ੍ਰੈਡਿਟ : 6

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 150

(ਪੇਪਰ : 120 ਅਤੇ ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 30)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 30 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਛੇ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਸਾਰੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 30 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਨਾਟਕ ਅਤੇ ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਨਾਟਕ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਦਸ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਦਾ ਪਹਿਲਾ ਸੁਆਲ ਨਾਟਕ ਦੇ ਸਾਰ/ ਵਿਸ਼ੇ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਾਟਕ ਦੇ ਪਾਤਰ ਵਿਧਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਅਤੇ ਇੱਕ ਸੁਆਲ ਨਾਟਕਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਦਸ-ਦਸ ਨੰਬਰਾਂ ਦੇ ਹੋਣਗੇ।
5. ਯੂਨਿਟ ਚੌਥਾ ਦੇ ਪੰਜ ਉਪ-ਭਾਗ ਹਨ। ਉਪ-ਭਾਗ ਪਹਿਲਾ ਵਿੱਚ ਲਿੱਪੀ, ਉਪਭਾਗ ਦੂਜਾ ਵਿੱਚ ਭਾਸ਼ਾ ਤੇ ਲਿੱਪੀ ਦੇ ਸਬੰਧ, ਉਪ-ਭਾਗ ਤੀਜਾ ਵਿੱਚ ਗੁਰਮੁਖੀ ਲਿੱਪੀ, ਉਪਭਾਗ ਚੌਥਾ ਵਿੱਚ ਸ਼ਾਹਮੁਖੀ ਲਿੱਪੀ ਅਤੇ ਉਪਭਾਗ ਪੰਜਵਾਂ ਵਿੱਚ ਗੁਰਮੁਖੀ ਲਿੱਪੀ ਅਤੇ ਸ਼ਾਹਮੁਖੀ ਲਿੱਪੀ : ਸਬੰਧ ਅਤੇ ਅੰਤਰ ਨਿਖੇੜ ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਉਪ-ਭਾਗ ਛੇ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਦਾ ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਨਾਟਕ ਦੇ ਇਤਿਹਾਸ, ਇਸਦੇ ਝੁਕਾਵਾਂ ਅਤੇ ਪ੍ਰਮੁੱਖ ਨਾਟਕਕਾਰਾਂ ਨਾਲ ਪਰਿਚੈ ਕਰਾਉਣਾ ।
- ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੇ ਅਧਿਐਨ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਪ੍ਰਤੀ ਵਿਸ਼ੇਸ਼ ਸਮਝ ਪੈਦਾ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-GE- 605.1	ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਨਾਟਕ ਅਤੇ ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਨਾਟਕ ਦੇ ਸਿਧਾਂਤ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਦੀ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।
BH-PBI-GE- 605.2	ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਨਾਟਕ ਦੇ ਮੁੱਖ ਸਰੋਕਾਰਾਂ ਨਾਲ ਜਾਣ-ਪਛਾਣ ਹੋਵੇਗੀ।
BH-PBI-GE- 605.3	ਪਾਕਿਸਤਾਨੀ ਨਾਟਕਕਾਰਾਂ ਦੀਆਂ ਰਚਨਾਵਾਂ ਦੇ ਹਵਾਲੇ ਨਾਲ ਪਾਕਿਸਤਾਨ ਵਿਚਲੇ ਪੰਜਾਬੀ ਜਨ-ਜੀਵਨ, ਸਭਿਆਚਾਰ, ਸੋਚ ਅਤੇ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਸਮਝਣ ਦੀ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।
BH-PBI-GE- 605.4	ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੀ ਪੜ੍ਹਾਈ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਸੰਰਚਨਾ ਅਤੇ ਵਰਤੋਂ ਵਿਹਾਰ ਬਾਰੇ ਸਮਝ ਅਤੇ ਮੁਹਾਰਤ ਪੈਦਾ ਹੋਵੇਗੀ

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਨਾਟਕ ਅਤੇ ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਨਾਟਕ : ਸਿਧਾਂਤ ਅਤੇ ਇਤਿਹਾਸ

1.1 ਨਾਟਕ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਤੱਤ

1.2 ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਨਾਟਕ : ਪ੍ਰਮੁੱਖ ਵੰਨਗੀਆਂ

1.3 ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਨਾਟਕ : ਆਰੰਭ ਤੇ ਵਿਕਾਸ

1.4 ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਨਾਟਕ : ਪ੍ਰਮੁੱਖ ਝੁਕਾਅ / ਪ੍ਰਵਿਰਤੀਆਂ

ਯੂਨਿਟ ਦੂਜਾ

2. ਸ਼ਾਹਿਦ ਨਦੀਮ, ***ਭੁੱਲ੍ਹਾ***, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ

2.1 ਵਿਸ਼ਾ / ਮੂਲ ਸਮੱਸਿਆ

2.2 ਨਾਟ ਕਲਾ, ਜੁਗਤਾਂ, ਕਥਾਨਕ

2.3 ਸਮਾਜ-ਸਭਿਆਚਾਰਕ ਚੇਤਨਾ

2.4 ਪਾਕਿਸਤਾਨੀ ਨਾਟਕ ਦਾ ਵੱਖਰਾ ਮੁਹਾਂਦਰਾ

2.5 ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ

ਯੂਨਿਟ ਤੀਜਾ

3. ਵਿਹਾਰਕ ਪੰਜਾਬੀ

3.1 ਲਿੱਪੀ : ਪਰਿਭਾਸ਼ਾ ਤੇ ਪ੍ਰਯੋਜਨ

3.2 ਭਾਸ਼ਾ ਅਤੇ ਲਿੱਪੀ ਦੇ ਸਬੰਧ

3.3 ਗੁਰਮੁਖੀ ਲਿੱਪੀ

3.4 ਸ਼ਾਹਮੁਖੀ ਲਿੱਪੀ

3.5 ਗੁਰਮੁਖੀ ਲਿੱਪੀ ਅਤੇ ਸ਼ਾਹਮੁਖੀ ਲਿੱਪੀ : ਸਬੰਧ ਅਤੇ ਅੰਤਰ ਨਿਖੇੜ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਅਜਮੇਰ ਸਿੰਘ, ਖੋਜ ਪੱਤ੍ਰਿਕਾ (ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਵਿਸ਼ੇਸ਼ ਅੰਕ), ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
2. ਬੂਟਾ ਸਿੰਘ ਬਰਾੜ, ਪੰਜਾਬੀ ਵਿਆਕਰਣ, ਸਿਧਾਂਤ ਤੇ ਵਿਹਾਰ, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ
3. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ, ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ, ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ
4. ਮਹਿੰਦਰ ਕੌਰ ਗਿੱਲ, ਵਿਹਾਰਕ ਪੰਜਾਬੀ, ਮਨਪ੍ਰੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ

Mapping Matrix of Course BH-PBI-GE- 605

Mapping: Mapping is a process of representing the correlation between COs and POs, Cos and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-GE- 605) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-GE- 605

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-GE- 605.1	3	3	3	2	2	3	3	3
BH-PBI-GE- 605.2	3	3	3	2	2	3	3	3
BH-PBI-GE- 605.3	3	3	3	2	2	3	3	3
BH-PBI-GE- 605.4	3	3	3	2	2	3	3	3
Average	3	3	3	2	2	3	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-GE- 605) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-GE- 605

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-GE- 605.1	3	3	3	3
BH-PBI-GE- 605.2	3	3	3	3
BH-PBI-GE- 605.3	3	3	3	3
BH-PBI-GE- 605.4	3	3	3	3
Average	3	3	3	3

Semester : III/ IV
BH-PBI-SEC- 1

ਸਿਰਜਣਾਤਮਕ ਲੇਖਣ ਦਾ ਹੁਨਰ : ਅਧਿਐਨ ਅਤੇ ਸਿਖਲਾਈ
(Sirjnatmak Lekhan Da Hunar : Adhyan Ate Sikhlai)

ਕ੍ਰੈਡਿਟ : 2

ਸਮਾਂ : 2 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 50

(ਪੇਪਰ : 40, ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 10)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 10 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਪੰਜ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਪੰਜੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਦੋ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ 5 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਸਿਰਜਣਾਤਮਕ ਲੇਖਣ ਦੇ ਹੁਨਰ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਦਾਨ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-SEC-1.1	ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਜਨ-ਸੰਚਾਰ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਹਿਲੂਆਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।
BH-PBI-SEC-1.2	ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਜਨ-ਸੰਚਾਰ ਦੇ ਪ੍ਰਿੰਟ ਅਤੇ ਇਲੈਕਟ੍ਰੋਨਿਕ ਮੀਡੀਆ ਦੇ ਹੁਨਰ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।
BH-PBI-SEC-1.3	ਵਿਦਿਆਰਥੀ ਸਿਰਜਣਾਤਮਕ ਲੇਖਣ ਦੇ ਹੁਨਰ ਵਿੱਚ ਵਿਵਹਾਰਕ ਅਤੇ ਪ੍ਰੋਫ਼ੈਸ਼ਨਲ ਤੌਰ 'ਤੇ ਮੁਹਾਰਤ ਹਾਸਲ ਕਰਨਗੇ।
BH-PBI-SEC-1.4	ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਖਬਰਾਂ ਦੇ ਸੰਪਾਦਨ, ਫ਼ੀਚਰ ਲੇਖਣ, ਇੰਟਰਵਿਊ ਕਲਾ ਅਤੇ ਵਿਗਿਆਪਨ ਲੇਖਣ ਦਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ।

ਯੂਨਿਟ ਪਹਿਲਾ

1. ਸਿਰਜਣਾਤਮਕ ਲੇਖਣ
1.1 ਸਿਰਜਣਾ ਲਈ ਕੁਝ ਜ਼ਰੂਰੀ ਨੁਕਤੇ
1.2 ਸਾਹਿਤ ਅਤੇ ਸੰਚਾਰ
1.3 ਜਨ-ਸੰਚਾਰ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ
1.4 ਸਿਰਜਣਾਤਮਕਤਾ ਅਤੇ ਮੀਡੀਆ ਲੇਖਣ- ਕਵਿਤਾ, ਕਹਾਣੀ ਅਤੇ ਨਾਟਕ
1.5 ਸਿਰਜਣਾਤਮਕ ਲੇਖਣ ਦਾ ਉਦੇਸ਼ ਅਤੇ ਮਹੱਤਵ

ਯੂਨਿਟ ਦੂਜਾ

2. ਜਨ-ਸੰਚਾਰ ਲਈ ਸਿਰਜਣਾ : ਪ੍ਰਿੰਟ ਮੀਡੀਆ
2.1 ਖਬਰਾਂ ਦਾ ਸੰਪਾਦਨ

2.2 ਫ਼ੀਚਰ ਲੇਖਣ

2.3 ਇੰਟਰਵਿਊ ਲੇਖਣ

2.4 ਵਿਗਿਆਪਨ ਲੇਖਣ

2.5 ਬੱਚਿਆਂ ਲਈ ਲੇਖਣ

ਯੂਨਿਟ ਤੀਜਾ

3. ਜਨ-ਸੰਚਾਰ ਲਈ ਸਿਰਜਣਾ : ਇਲੈਕਟ੍ਰੋਨਿਕ ਮੀਡੀਆ

3.1 ਖ਼ਬਰਾਂ ਲੇਖਣ ਦੀ ਕਲਾ ਸਿੱਖਣਾ

3.2 ਐਂਕਰਿੰਗ ਦੀ ਕਲਾ ਸਿੱਖਣਾ

3.3 ਇੰਟਰਨੈੱਟ ਦਾ ਪ੍ਰਯੋਗ ਸਿੱਖਣਾ

3.4 ਇੰਟਰਵਿਊ ਕਰਨ ਦੀ ਕਲਾ ਸਿੱਖਣਾ

3.5 ਵਿਗਿਆਪਨ ਤਿਆਰ ਕਰਨਾ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਜਗਜੀਤ ਕੌਰ ਅਤੇ ਮਨਜੀਤ ਸਿੰਘ (ਸੰਪਾ.), ਸਿਰਜਣਾਤਮਕ ਲੇਖਣ ਅਤੇ ਜਨ-ਸੰਚਾਰ ਮਾਧਿਅਮ, ਮਨਪ੍ਰੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ

2. ਰਵੇਲ ਸਿੰਘ, ਮੀਡੀਆ ਵਿਹਾਰਕ ਅਧਿਐਨ, ਗਰੇਸੀਅਸ ਬੁੱਕਸ, ਪਟਿਆਲਾ

3. ਪ੍ਰਿਥਵੀ ਰਾਜ ਥਾਪਰ, ਸੰਚਾਰ ਤਕਨੀਕ ਅਤੇ ਮਲਟੀਮੀਡੀਆ, ਮਨਪ੍ਰੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ

Mapping Matrix of Course BH-PBI-SEC- 1

Mapping: Mapping is a process of representing the correlation between COs and POs, COs and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and Pos

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-SEC- 1) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-SEC- 1

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-SEC- 1.1	3	3	3	2	3	2	3	3
BH-PBI-SEC- 1.2	3	3	3	2	3	2	3	3
BH-PBI-SEC- 1.3	3	3	3	2	3	2	3	3
BH-PBI-SEC- 1.4	3	3	3	2	3	2	3	3
Average	3	3	3	2	3	2	3	3

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-SEC- 1) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-SEC- 1

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-SEC- 1.1	3	2	3	3
BH-PBI-SEC- 1.2	3	3	3	3
BH-PBI-SEC- 1.3	3	3	3	3
BH-PBI-SEC- 1.4	3	3	3	2
Average	3	2.75	3	2.75

Semester : III/ IV
BH-PBI-SEC- 2

ਫ਼ਿਲਮਸਾਜ਼ੀ ਦਾ ਹੁਨਰ : ਅਧਿਐਨ ਅਤੇ ਸਿਖਲਾਈ
(Filmsazi Da Hunar : Adhyan Ate Sikhlai)

ਕ੍ਰੈਡਿਟ : 2

ਸਮਾਂ : 2 ਘੰਟੇ ਕੁੱਲ ਅੰਕ : 50

(ਪੇਪਰ : 40, ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ : 10)

ਨੋਟ :

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 10 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਪੰਜ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੇ ਇਹ ਪੰਜੇ ਸਵਾਲ ਕਰਨੇ ਹਨ। ਇਸ ਸੁਆਲ ਵਿੱਚ ਕੋਈ ਅੰਦਰੂਨੀ ਛੋਟ ਨਹੀਂ ਹੋਵੇਗੀ। ਹਰ ਸਵਾਲ ਦੋ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਤਿੰਨ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਹਰ ਯੂਨਿਟ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ 5 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

ਉਦੇਸ਼ (Objectives)

- ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਫ਼ਿਲਮਸਾਜ਼ੀ ਦੇ ਹੁਨਰ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਦਾਨ ਕਰਨਾ।

ਸੰਭਾਵਿਤ ਨਤੀਜੇ (Course Outcomes)

BH-PBI-SEC- 2.1	ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਭਾਰਤੀ ਅਤੇ ਪੰਜਾਬੀ ਫ਼ਿਲਮਸਾਜ਼ੀ ਦੇ ਇਤਿਹਾਸ ਅਤੇ ਪ੍ਰਮੁੱਖ ਝੁਕਾਵਾਂ ਦਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ
BH-PBI-SEC- 2.2	ਵਿਦਿਆਰਥੀ ਫ਼ਿਲਮਸਾਜ਼ੀ, ਕੋਰੀਓਗਰਾਫ਼ੀ, ਸਿਨਮੈਟੋਗਰਾਫ਼ੀ ਅਤੇ ਫ਼ਿਲਮਾਂ ਲਈ ਸੰਵਾਦ ਲੇਖਣ ਦੀ ਗਹਿਨ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਕਰਨਗੇ।
BH-PBI-SEC- 2.3	ਵਿਦਿਆਰਥੀ ਫ਼ਿਲਮ ਮੁਲਾਂਕਣ, ਫ਼ਿਲਮ ਰਿਵਿਊ ਕਰਨ ਦੀ ਮੁਹਾਰਤ ਹਾਸਲ ਕਰ ਸਕਣਗੇ।
BH-PBI-SEC- 2.4	ਵਿਦਿਆਰਥੀ ਫ਼ਿਲਮਸਾਜ਼ੀ ਦੇ ਹੁਨਰ ਵਿੱਚ ਵਿਵਹਾਰਕ ਅਤੇ ਪ੍ਰੋਫ਼ੈਸ਼ਨਲ ਤੌਰ 'ਤੇ ਮੁਹਾਰਤ ਹਾਸਲ ਕਰਨਗੇ।

ਯੂਨਿਟ ਪਹਿਲਾ

1 ਭਾਰਤੀ ਅਤੇ ਪੰਜਾਬੀ ਫ਼ਿਲਮਸਾਜ਼ੀ

1.1 ਭਾਰਤੀ ਅਤੇ ਪੰਜਾਬੀ ਫ਼ਿਲਮਸਾਜ਼ੀ : ਆਰੰਭ ਅਤੇ ਵਿਕਾਸ

1.2 ਭਾਰਤੀ ਅਤੇ ਪੰਜਾਬੀ ਫ਼ਿਲਮਸਾਜ਼ੀ : ਪ੍ਰਵਿਰਤੀਆਂ ਅਤੇ ਝੁਕਾਅ

1.3 ਭਾਰਤੀ ਅਤੇ ਪੰਜਾਬੀ ਫ਼ਿਲਮਸਾਜ਼ੀ : ਅੰਤਰ ਪ੍ਰਭਾਵ

ਯੂਨਿਟ ਦੂਜਾ

2.1 ਨਾਚ ਨਿਰਦੇਸ਼ਨ ਜਾਂ ਕੋਰੀਓਗ੍ਰਾਫ਼ੀ : ਪਰਿਭਾਸ਼ਾ, ਕਾਰਜ ਅਤੇ ਮਹੱਤਵ

2.2 ਕੈਮਰਾਮੈਨ ਜਾਂ ਸਿਨਮੈਟੋਗ੍ਰਾਫ਼ਰ : ਪਰਿਭਾਸ਼ਾ, ਕਾਰਜ ਅਤੇ ਮਹੱਤਵ

2.3 ਫ਼ਿਲਮਸਾਜ਼ੀ ਦੀ ਭਾਸ਼ਾ/ ਸ਼ਬਦਾਵਲੀ

2.4 ਨਿਰਦੇਸ਼ਨ ਅਤੇ ਨਿਰਦੇਸ਼ਕ

2.5 ਫ਼ਿਲਮ ਲਈ ਕਹਾਣੀ ਲੇਖਣ

2.6 ਸੰਵਾਦ ਲੇਖਣ

2.7 ਗੀਤ ਸੰਗੀਤ ਦੀ ਚੋਣ ਅਤੇ ਤਿਆਰੀ

2.8 ਅਦਾਕਾਰਾਂ ਦੀ ਚੋਣ ਜਾਂ ਕਾਸਟਿੰਗ, ਹੈਂਡਲਿੰਗ

ਯੂਨਿਟ ਤੀਜਾ

3. ਮੜੀ ਦਾ ਦੀਵਾ (ਫ਼ਿਲਮ, 1989), ਨਿਰਦੇਸ਼ਕ ਸੁਰਿੰਦਰ ਸਿੰਘ, ਪ੍ਰੋਡਿਊਸਰ ਰਵੀ ਮਲਿਕ

3.1 ਫ਼ਿਲਮ ਦਾ ਮੁਲਾਂਕਣ/ ਰਿਵਿਊ

3.2 ਆਧਾਰਤ ਨਾਵਲ (ਮੜੀ ਦਾ ਦੀਵਾ) ਤੋਂ ਫ਼ਿਲਮੀ ਰੂਪਾਂਤਰਣ- ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ

3.3 ਸੰਵਾਦ ਦੀ ਭਾਸ਼ਾ

3.4 ਪਾਤਰਾਂ ਦੀ ਅਦਾਕਾਰੀ ਦਾ ਵਿਸ਼ਲੇਸ਼ਣ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਬਖ਼ਸ਼ਿੰਦਰ, **ਫ਼ਿਲਮਸਾਜ਼ੀ**, ਕਲਮਿਸਤਾਨ, 2-ਨਿਊ ਦਿਓਲ ਨਗਰ, ਜਲੰਧਰ, 2010
2. Jasbir Kaur (Dr.), **Punjabi samaj Ate Media**, Publication Bureau, punjabi University, patiala, 2014
3. ਬਲਜਿੰਦਰ ਨਸਰਾਲੀ, **ਪੰਜਾਬੀ ਸਿਨੇਮਾ ਅਤੇ ਸਾਹਿਤ** (ਸਮਕਾਲੀ ਸੰਦਰਭ), ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ

Mapping Matrix of Course BH-PBI-SEC- 2

Mapping: Mapping is a process of representing the correlation between COs and POs, Cos and PSOs in the scale of 1 to 3 as follows (Table 1):

Table 1: Scale of mapping between COs and POs

Scale	
1	If the contents of course have low correlation (i.e. in agreement with the particular PO to a small extent) with the particular Programme outcome
2	If the contents of course have medium correlation (i.e. in agreement with the particular PO to a reasonable extent) with the particular Programme outcome
3	If the contents of course have strong correlation (i.e. in agreement with the particular PO to a large extent) with the particular Programme outcome

Mapping of Course Outcomes to Programme Outcomes: (CO-PO Mapping Matrix)

Table 2 shows the CO-PO mapping matrix for a course (BH-PBI-SEC- 2) assuming that there are 8 POs and 4COs.

Table 2: CO-PO Matrix for the Course BH-PBI-SEC- 2

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
BH-PBI-SEC- 2.1	3	2	3	3	3	3	2	2
BH-PBI-SEC- 2.2	3	3	3	3	3	3	3	3
BH-PBI-SEC- 2.3	3	3	3	3	3	3	3	3
BH-PBI-SEC- 2.4	3	3	3	3	3	3	3	3
Average	3	2.75	3	3	3	3	2.75	2.75

Mapping of Course Outcomes to Programme Specific Outcomes: (CO-PSO Mapping Matrix)

Table 3 shows the CO-PSO mapping matrix for a course (BH-PBI-SEC- 2) assuming that there are 4 PSOs and 4COs.

Table 3: CO-PSO Matrix for the Course BH-PBI-SEC- 2

CO	PSO 1	PSO 2	PSO 3	PSO 4
BH-PBI-SEC- 2.1	3	3	3	3
BH-PBI-SEC- 2.2	2	3	3	3
BH-PBI-SEC- 2.3	2	2	3	3
BH-PBI-SEC- 2.4	2	3	3	3
Average	2.5	2.75	3	3

AECC-BHMCT-2	**ENVIRONMENTAL & ECOLOGICAL PRACTICES IN HOTELS** **Credits –02** **External Marks -32** **Internal Marks -08** **Total Marks -40**	
COURSE OBJECTIVES: - Co 1 Define the meaning, scope & importance of environmental studies in hotel industry. - Co 2 Explain & illustrate the importance of ecology & ecosystems. - Co 3 Solve the problem of environment pollution. - Co 4 Create the awareness about impact of human population on environment.		
UNIT- I	Environmental studies – meaning – scope – importance	CO 1
UNIT- II	Ecology and Ecosystems, Biodiversity and its Conservation, and Natural resources – meaning of ecology – structure and function of an ecosystem – producers – consumers – decomposers – energy flow in the ecosystem – ecological succession- food chain – food webs and ecological pyramids . Ecosystem – concept– types of ecosystems – structure and functions of forest ecosystem, grass land ecosystem- desert ecosystem, aquatic ecosystem. Biodiversity and its conservation- introduction- definition- genetic, species and ecosystem diversity- value of biodiversity- biodiversity at global, national and local levels- India as a mega- diversity nation- hot- spots of diversity- threats to diversity- conservation of diversity in in- situ, excitu. Natural resources- features- air resources, forest resources, water resources, mineral resources, food resources- energy resources, land resources- over exploitation of natural resources- consequences- conservation of natural resources- role of an individual in conservation of natural resources.	**CO 2, CO 3**
UNIT-III	Hotel Industry and environment pollution Environmental pollution – soil pollution – air pollution – water pollution – thermal pollution – noise pollution –	**CO 2, CO 3**

	causes, effect and control measures – Waste management in Hotels – waste minimization through cleaner technologies – reuse and recycling - solid waste management.	
UNIT- IV	Human Population and environment – population growth – variation among nations – population explosion – environment and human health – human rights – value education – women and child welfare.	**CO4**

REFERENCE BOOKS

1. Misra. S.P and Pandey .S.N. Essential Environmental Studies, Ane Books India,New Delhi.
2. Kiran B. Chokkas and others. Understanding Environment, Sage Publications New Delhi.
3. Arumugam N. and Kumaresan V. Environmental Studies, Saras Publications, Kanyakumari.
4. Benny Joseph. Environmental Studies, Tata McGraw-Hill Publishing Co.Ltd.,New Delhi.

MAPPING OF COURSE OBJECTIVE AND PROGRAM OBJECTIVE

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	1	1	1	1	1	1	1	3
CO2	1	2	1	2	1	1	1	3
CO3	1	2	2	2	2	1	1	1
CO4	1	1	1	1	2	1	1	3
	1	1.5	1.25	1.5	1.5	1	1	1.75

MAPPING OF COURSE OBJECTIVE, AND PROGRAM SPECIFIC OBJECTIVE

	PSO1	PSO2	PSO3	PSO 4	PSO 5
Co 1	2	2	2	2	2
Co 2	2	2	2	2	2
Co 3	2	2	2	2	2
Co 4	1	1	1	1	1
	1.75	1.75	1.75	1.75	1.75

MAPPING OF COURSE OBJECTIVE, PROGRAM OBJECTIVE AND PROGRAM SPECIFIC OBJECTIVE

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
Co 1	1	1	1	1	1	1	1	3	2	2	2	2	2
Co 2	1	2	1	2	1	1	1	3	2	2	2	2	2
Co 3	1	2	2	2	2	1	1	1	2	2	2	2	2
Co 4	1	1	1	1	2	1	1	3	1	1	1	1	1
	1	1.5	1.25	1.5	1.5	1	1	1.75	1.75	1.75	1.75	1.75	1.75

Kurukshetra University Kurukshetra
Scheme of Examinations and Syllabus of
M.A. ANCIENT INDIAN HISTORY, CULTURE & ARCHAEOLOGY
(CBCS-LOCF w.e.f. the academic Session 2021-2022 in phased manner)

The entire course will be of **four semesters**. Each student should earn a minimum of **84** credits over the entire course (**Hard Core = 80**; **Soft Core = 20**; **Field Work/Practical** = **40**; **Open Elective = 50**) Minimum pass marks in theory (including internal Assessment/Practical) would be **40%.**

Ancient Indian History, Culture & Archaeology (1st& 2nd Semester)

In semester 1st and 2nd, there would be four Hard core papers and one soft core paper. Each student will opt for one open elective in 2nd Sem.

Sem.	Paper Code	Nomenclature	Hrs./ Week/ L+T+P	Marks			Exam. Hrs.	Credits L+T+P
				Int. Assess.	Sem. End. Exam.	Total		
1st Semester	16/20AIH101	Political History of Ancient India (From earliest time to c. A.D. 319)	4+1+0	20	80	100	3Hrs.	4
	16/20AIH102	Political History of Ancient India (from c.A.D.320 to 1206)	4+1+0	20	80	100	3Hrs.	4
	16/20AIH103	Ancient Indian Societies	4+1+0	20	80	100	3Hrs.	4
	16/20AIH104	Introduction to Archaeology	4+1+0	20	80	100	3Hrs.	4
	16/20AIH105	Opt. (i) History & Culture of Ancient Haryana Or Opt. (ii)Women in Ancient India	4+1+0	20	80	100	3Hrs.	4
Total Credits in 1stSemester = 20								
2nd Semester	16/20AIH201	Ancient Indian Administration and Polity	4+1+0	20	80	100	3Hrs.	4
	16/20AIH202	Science & Technology in Ancient India	4+1+0	20	80	100	3Hrs.	4
	16/20AIH203	Ancient Indian Economy	4+1+0	20	80	100	3Hrs.	4
	16/20AIH204	Early Historic Archaeology	4+1+0	20	80	100	3Hrs.	4
	16/20AIH205	Opt. (i) Archaeological Sites & Ancient Monuments in Haryana Or Opt. (ii) Socio-economic status of Women in Ancient India	4+1+0	20	80	100	3Hrs.	4

Open Elective (For the Students of other Departments)						
One Open Elective(16/20AIH206) Outline of Ancient Indian History	**2+0+0**	**10**	**40**	**50**	**3Hrs.**	**2**
Total Credits of various courses in 2nd Semester	**Total Credits= 22**					

Ancient Indian History, Culture & Archaeology (3rd & 4th Semester)

In **3rd semester,** there would be three groups i.e. Group-A, Group-B and Group-C. Students are required to choose any one of the following groups in 3rd Sem. In Semester 3rd there would be four Hard Core papers, one Soft core paper and one Open Elective for each group.

In **4th semester,** there would be three groups i.e. Group-A, Group-B and Group-C as in 3rd semester. Students are required to opt for the same groups what they have opted in 3rd Sem. There would be four Hard core papers and one Soft core paper.

Sem./Group	Paper Code	Nomenclature	Hrs./ Week/ L+T+P	Marks			Exam. Hrs.	Credits L+T+P
				Int. Assess.	Sem. End. Exam.	Total		
3rd Semester	**Common /Mandatory for Each Group**							
	16/20AIH301	Historiography	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**
	OR							
	16/20AIH301 -VD	**Dissertation**	**4+1+0**	**Viva 20**	**Dissertation 80**	**100**		**4**

❖ **Choice Paper or Dissertation (16/20AIH301 or 16/20AIH301-VD)**

Candidate can choose any group of the following (Group-A, B & C)

Sem./Group	Paper Code	Nomenclature	Hrs./ Week/ L+T+P	Marks			Exam. Hrs.	Credits L+T+P
				Int. Assess.	Sem. End. Exam.	Total		
3rd Sem. Group-A	**16/20AIH302**	Pre-Historic India	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**
	16/20AIH303	Proto-Historic India	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**
	16/20AIH304	Elements of Ancient Indian Epigraphy	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**
	16/20AIH305	Elements of Ancient Indian Art	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**
Group-B	**16/20AIH306**	Ancient Indian Epigraphy	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**
	16/20AIH307	Ancient Indian Numismatics	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**
	16/20AIH308	Elements of Archaeological Studies	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**
	16/20AIH305	Elements of Ancient Indian Art	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**
Group-C	**16/20AIH309**	History of Ancient Indian Art	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**
	16/20AIH310	Ancient Indian Architecture	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**
	16/20AIH308	Elements of Archaeological Studies	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**
	16/20AIH304	Elements of Ancient Indian Epigraphy	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**
Open Elective (For the Students of other Departments)								
One Open Elective Paper (16/20/AIH311) Historiography, Concept , Method & Tools			**2+0+0**	**10**	**40**	**50**	**3Hrs.**	**2**

Total Credits of various courses each group in 3rd Semester	Total Credits= 22

Sem./Group	Paper Code	Nomenclature	Hrs./ Week/ L+T+P	Marks			Exam Hrs.	Credits L+T+P
				Int. Assess. /Practical/ Internship	Sem. End. Exam.	Total		
4th Semester	**Common /Mandatory for Each Group**							
	16/20AIH401	Historiography, Concept, Methods & Tools of Ancient History	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**

Candidate can choose any group of the following (Group-A, B & C)

4th Semester Group-A	**16/20AIH402**	Principles and Methods of Archaeology	**4+0+4**	**40**	**60**	**100**	**3Hrs.**	**4**
	16/20AIH403	Study of Ancient Pottery	**4+0+4**	**40**	**60**	**100**	**3Hrs.**	**4**
	16/20AIH404	Elements of Ancient Indian Numismatics	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**
	16/20AIH405	Elements of Ancient Indian Architecture	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**
Group-B	**16/20AIH406**	Study of Ancient Inscription	**4+0+4**	**40**	**60**	**100**	**3Hrs.**	**4**
	16/20AIH407	Study of Ancient Coins	**4+0+4**	**40**	**60**	**100**	**3Hrs.**	**4**
	16/20AIH408	Elements of Field Archaeology	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**
	16/20AIH405	Elements of Ancient Indian Architecture	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**
Group-C	**16/20AIH409**	Iconographical Study of Ancient Indian Art	**4+0+4**	**40**	**60**	**100**	**3Hrs.**	**4**
	16/20AIH410	Study of Ancient Monuments	**4+0+4**	**40**	**60**	**100**	**3Hrs.**	**4**
	16/20AIH408	Elements of Field Archaeology	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**
	16/20AIH404	Elements of Ancient Indian Numismatics	**4+1+0**	**20**	**80**	**100**	**3Hrs.**	**4**
Total Credit of various courses each group in 4th Sem.					**Total Credit= 20**			

- **The Evaluation will be external and a vive-voce of Practical/Internship to be conducted in the Department by an external expert.**
- **One Open Elective in 2nd& 3rd Semester(For the Students of other Departments)**

Programme outcomes (P.O.) of the Faculty of Indic Studies.

1. Scientific & Logical Knowledge of Ancient Indian Wisdom.
2. Enhancing knowledge of Indian Cultural Traditions.
3. Knowledge of Vedic, Medieval & Modern Philosophies.
4. Inculcation of Nationalism and other Moral Values.
5. Enhancing mental relaxation and peace by adopting Prayer, Chanting, Yoga and Meditation.
6. Preservation of Indian Arts and Heritage by using modern technologies.
7. To Import knowledge of different Sanskaras & Philosophy.
8. Imparting knowledge of Folk Traditions in different disciplines of the Faculty.
9. Developing aesthetics, Creativity & Skills like Singing, Painting and Dancing.
10. Improving the Emotional Intelligence through Geeta.

Programme outcomes (P.S.O.) of the Department of Ancient Indian History, Culture & Archaeology.

1. Construct strong foundation of Ancient Indian Culture and Civilization. Ability to pursue to advance research the understand the Indian civilization.
2. To Impart knowledge of Archaeology, Epigraphy, Numismatic, Art & Architecture.
3. To impart the Ancient Indian Sanskaras to become better human being.
4. To impart the ethical value of Indian Culture. To improve the knowledge of Upanishada's philosophy and Bhagwad Gita knowledge for better human being.
5. Ensure the eligibility after the post graduation as college / university teachers, pgt, museum curator, tourist guide and job in Archaeological Survey of India.

DEPARTMENT Of ANCIENT INDIAN HISTORY, CULTURE & ARCHAEOLOGY

Structure and the Syllabi of M.A. Ancient Indian History, Culture & Archaeology

The M.A. programme shall be spread over four semesters, with five courses/papers of four credits each in every semester. A student shall do four core courses/papers and one optional/elective course/paper in the first and second semesters put together. In third and forth semesters three groups will be offered with five core courses/papers in each. The student has to choose one among the three_ Group-A, Group-B and Group-C.

M.A. (1st Semester)

The purpose of the following four core courses/papers is to introduce the students with the general aspects of political condition of Ancient India, genealogy of different dynasties ruled over India in different phases of Ancient India, social structure & social life, an overview of important aspects of contemporary world civilizations and theories & methods of Archaeology. The first option of fifth optional/elective course/paper shall introduce the students with the regional aspects of History & Culture of Ancient Haryana, while the second option will provide an overview of overall condition of women in Ancient India. .

Paper-I	**(16/21AIH101)**	Political History of Ancient India (From earliest time to c. A.D. 319)
Paper-II	**(16/21AIH102)**	Political History of Ancient India (from c.A.D.320 to 1206)
Paper-III	**(16/21AIH103)**	Ancient Indian Society
Paper-IV	**(16/21AIH104)**	Introduction to Archaeology
Paper-V	**(16/21AIH105)**	Opt. (i) History & Culture of Ancient Haryana Or Opt. (ii) Women in Ancient India

M.A. (2nd Semester)

The purpose of the following four core courses/papers is to introduce the students with the general aspects of political entity and administrative systems of Ancient India, different phases of development of Science & Technology in Ancient India genealogy of different dynasties ruled over India in different phases of Ancient India, economic structure &economic life in ancient India and study of important archaeological sites of early historical period. The first option of fifth optional/elective course/paper shall introduce the students with the general survey of archaeological sites and archaeological monuments of Haryana, while the second option will provide an overall condition of women in Ancient India.

Paper-I	**(16/20AIH201)**	Ancient Indian Administration and Polity
Paper-II	**(16/20AIH202)**	Science & Technology in Ancient India
Paper-III	**(16/20AIH203)**	Ancient Indian Economy
Paper-IV	**(16/20AIH204)**	Early Historic Archaeology
Paper-V	**(16/20AIH205)**	Opt. (i) Archaeological Sites &Ancient Monuments in Haryana Or Opt. (ii) Socio-economic Status of Women in Ancient India
Open Elective Course	**(16/20AIH206)**	Outline of Ancient Indian History

M.A. (3rd Semester)

(The candidates have to choose any one of the following groups)

GROUP-A

The purpose of the following five core courses/papers in this Group is to acquaint students with the basic understanding of the subject history, its philosophy, the approaches to historical studies and historian's views. The courses provided the detailed survey of Pre & Proto-historic cultures in Indian context. The students critically analyze the various aspects of inscriptions and their importance as a source of Indian history; learn the origin and antiquity of art of writing in India as well as origin of Brahmi Script and Kharoshthi Script and characterization & categorization of art forms in Indian context.

Paper-I	**(16/20AIH301)**	Historiography
Paper-II	**(16/20AIH302)**	Pre-Historic India
Paper-III	**(16/20AIH303)**	Proto-Historic India
Paper-IV	**(16/20AIH304)**	Elements of Ancient Indian Epigraphy
Paper-V	**(16/20AIH305)**	Elements of Ancient Indian Art

GROUP-B

The purpose of the following five core courses/papers in this Group is to acquaint students with the basic understanding of the subject history, its philosophy, the approaches to historical studies and historian's views. The courses provided the general survey of Pre & Proto historic cultures in Indian context. The students critically analyze the various aspects of inscriptions and coinage; their importance as a source of Indian history; learn the origin and antiquity of art of writing in India as well as origin of Brahmi Script and Kharoshthi Script and characterization & categorization of art forms in Indian context.

Paper-I	**(16/20AIH301)**	Historiography
Paper-II	**(16/20AIH306)**	Ancient Indian Epigraphy
Paper-II	**(16/20AIH307)**	Ancient Indian Numismatics
Paper-IV	**(16/20AIH308)**	Elements of Archaeological Studies
Paper-V	**(16/20AIH305)**	Elements of Ancient Indian Art

GROUP-C

The purpose of the following five core courses/papers in this Group is to acquaint students with the basic understanding of the subject history, its philosophy, the approaches to historical studies and historian's views. The courses provided the general survey of Pre & Proto historic cultures in Indian context. The courses focused on the developments of architecture, iconographical aspects of sculpture and paintings in ancient India, while situating these within the larger historical milieu. Alongside a broad overview, representative material will be treated in detail to convey the variety, complexity and diversity that characterized the art & architectural forms of ancient India. The students critically analyze the various aspects of inscriptions and their importance as a source of Indian history; learn the origin and antiquity of art of writing in India as well as origin of Brahmi Script and Kharoshthi Script.

Paper-I	**(16/20AIH301)**	Historiography
Paper-II	**(16/20AIH309)**	History of Ancient Indian Art
Paper-III	**(16/20AIH310)**	Ancient Indian Architecture
Paper-IV	**(16/20AIH308)**	Elements of Archaeological Studies
Paper-V	**(16/20AIH304)**	Elements of Ancient Indian Epigraphic

Open Elective Course (AIH-311) Historiography, Concepts & Methods & Tools

M.A. (4th Semester)

(The candidates have to choose any one of the following groups)

GROUP-A

The purpose of the following five core courses/papers in this Group is to acquaint students with the basic understanding of the subject history, its approaches to historical research, research method & tools and other basic ideas. The broad objective of the courses is to familiarize the students to the theoretical basis of field methods in Archaeology; train them to identify and categorization of pottery and make pottery drawing. The students critically analyze the various aspects of inscriptions and coinage; their importance as a source of Indian history and characterization & categorization of architectural forms in ancient Indian context.

Paper-I	**(16/20AIH401)**	Historiography, Concept, Methods & Tools of Ancient History
Paper-II	**(16/20AIH402)**	Principles & Methods of Archaeology
Paper-III	**(16/20AIH403)**	Study of Ancient Pottery
Paper-IV	**(16/20AIH404)**	Elements of Ancient Indian Numismatics
Paper-V	**(16/20AIH405)**	Elements of Ancient Indian Architecture

GROUP-B

The purpose of the following five core courses/papers in this Group is to acquaint students with the basic understanding of the subject history, its approaches to historical research, research method & tools and other basic ideas. The courses aims at critical analysis of the various aspects of inscriptions and coinage; their importance as a source of Indian history; learn the origin and antiquity of art of writing in India as well as train the students to decipher and transliterate Brahmi Script and Kharoshthi Script; to train the students to decipher and identify the coins; characterization & categorization of architectural forms in Indian context and to familiarize them to the theoretical basis of field methods in Archaeology.

Paper-I	**(16/20AIH401)**	Historiography, Concept, Methods & Tools of Ancient History
Paper-II	**(16/20AIH406)**	Study of Ancient Inscription
Paper-II	**(16/20AIH407)**	Study of Ancient Coins
Paper-IV	**(16/20AIH408)**	Elements of Field Archaeology
Paper-V	**(16/20AIH405)**	Elements of Ancient Indian Architecture

GROUP-C

The purpose of the following five core courses/papers in this Group is to acquaint students with the basic understanding of the subject history, its approaches to historical research, research method & tools and other basic ideas. The courses focused on the developments of architecture, iconographical aspects of sculpture and paintings in ancient India, while situating these within the larger historical milieu. Alongside a broad overview, representative material will be treated in detail to convey the variety, complexity and diversity that characterized the architectural forms of ancient monuments. The students critically analyze the various aspects of coinage; their importance as a source of Indian history and to familiarize them to the theoretical basis of field methods in Archaeology.

Paper-I	**(16/20AIH401)**	Historiography, Concept, Methods & Tools of Ancient History
Paper-II	**(16/20AIH409)**	Iconographical Study of Ancient Indian Art
Paper-III	**(16/20AIH410)**	Study of Ancient Monuments
Paper-IV	**(16/20AIH408)**	Elements of Field Archaeology
Paper-V	**(16/20AIH404)**	Elements of Ancient Indian Numismatics

Pedagogy of the course work: *The students are taught with the help of slides, photographs, topographical maps, political maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

DETAILS ANDREADING OF COURSES

M.A. (1ST SEMESTER)

Paper-I (16/20AIH101)Political History of Ancient India (From earliest time to c. A.D. 319)

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit: 4

Course Outcome:

CO1: Students understand the sources of Indian History.
CO2: Critically analyzed the Indus civilization, Vedic and Post-Vedic Civilization. Critically analyzed the rise of Magadha Empire and Political condition of India.
CO3: Critically evaluated about the rise of Mauryan Empire, its administration and downfall. Critically analyzed the new developments i.e emergence of Sungas, the Satavahanas, the Indo-Greeks and rise of new Powers i.e. the Saka-kshatrapas, the Pahlavas.
CO4: Students able to understand about emergence of the Kusanas and the republics i.e. Yaudheyas, Kunindas, Audumbras and Political condition of India before the rise of Gupta. The students came across the general survey of Political History of South India

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Geographical Study of Ancient India: Mountains, Rivers, Plains, Plateaus& Seas
2. Sources: Literary and Archaeological.

Unit - 2

3. Harppan Civilization
4. Vedic Age: Rig Vedic and Later Vedic political condition
5. Emergence of the Mahajanapadas and the political condition of the sixth century B.C.
6. Rise and growth of the Magadhan Empire

Unit - 3

7. Towards Mauryas: Genealogy of Mauryan Period, Extension of Mauryan Empire: ChandraguptaMaurya and Bindusara; Ashoka and his successors.Decline of Maurya's dynasty
8. The Indo-Greeks, the Saka and Pahlavas.
9. Sakas and Satavahans

Unit - 4

10. Rise and fall of the Kushana's Empire : Genealogical Study of Kushana'sDynasty
11. Political History of South India: Sangam age

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 101 .1	3	3	3	2	2	3	2	--	3	--
CO 101. 2	3	3	3	2	2	3	2	2	3	--
CO 101. 3	3	3	3	2	1	3	2	2	3	--
CO 101.4	3	3	3	2	2	2	2	3	3	--
AVG.	3	3	3	2	1.7	2.7	2	1.75	3	--

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 101.1	3	3	3	3	3
CO 101.2	3	3	3	3	3
CO 101.3	3	3	2	3	3
CO 101.4	3	3	2	3	3
AVG.	3	3	2.5	3	3

<u>BOOKS RECOMMENDED</u>

1. Majumdar, R.C.& Pusalkar, A.D. (Ed.) : Vedic Age.
2. Raychaudhuri, H.C. : Political History of Ancient India (6th Ed.) (English and Hindi)
3. Sastri, K.A.N. : The age of the Nandas and the Mauryas (English and Hindi)
4. Puri, B.N. : India under the Kusanas.
5. Mookarjee, R.K. : Chandragupta Maurya and His Times (English and Hindi).
6. Bhandarkar, D.R. : Ashoka (English and Hindi).
7. Thapar, R. : Ashoka and the Decline of the Mauryas (English and Hindi).
8. Pandey, V.C. : Prachin Bharat Ka Sanskritic Evam Rajnitic Itihas (in Hindi) Vol. I
9. Mukherjee, B.N. : The Rise and Decline of the Kusana Empire
10. Narain, A.K. : The Indo-Greeks.
11. Sastri, K.A.N. (Ed.) : Comprehensive History of India,
12. Rapson, E.J. (Ed.) : Cambridge History of India, Vol. I.

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-II (16/20AIH102) Political History of Ancient India (from c. A.D.320 to 1206)

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit: 4

Course Outcome:

CO1: Students get basic knowledge about the Imperial Guptas i.e. Early Kings, political achievements of emperors and the downfall of Imperial Guptas, emergence of New powers i.e. the Hunas.

CO2: Students understand the Maukharies and the Pushpabhutis, Harshvardhana and accounts of Huien-Tsang.

CO3: Students get the basic knowledge about the emergence of political powers i.e. Yashovarman of Kanauj, and Rise and Fall of the Pratihars, Palas, Rastrakutas and tripartitle struggle. Students also get the basic knowledge of political powers i.e. Chandelas, Parmaras, Chahamanas of Sakambhari, Gahadavals.

CO4: Students understand the period of Chalukyas of Badami, Pallavas and Cholas.

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Rise and fall of the Guptas.
2. Huna invasions and Yasodharman.

Unit - 2

3. Maukharis and the later Guptas.
4. Rise and fall of the Pushpabhatis: the contemporary Chinese Accounts.

Unit - 3

5. Rise and fall of the Paratihars, The Palas and The Rastrakutas. Tripartite Struggle.
6. The Chandellas, the Paramaras, the Gahadavalas and the Chahamanas.
7. The Arab and Turk invasions and the Indian resistance

Unit - 4

8. The Pallavas and the Chalukyas.
9. The Cholas

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 102 .1	3	3	2	2	2	3	3	2	3	1
CO 102. 2	3	3	2	2	2	3	3	2	3	3
CO 102. 3	3	3	2	2	2	3	3	2	3	1
CO 102.4	3	3	2	2	2	3	3	2	3	1
AVG.	3	3	2	2	2	3	3	2	3	1.5

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 102.1	3	3	3	3	3
CO 102.2	3	3	3	3	3
CO 102.3	3	3	2	3	3
CO 102.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED

1. Majumdar & Altekar : The Vakataka-Gupta Age
2. Gupta P.L. : Gupta Samrajya (in Hindi)
3. Ray U.N : History of Gupta Empire
4. Bose, N.S. : History of Chandelas
5. Bhatia, P. : The Paramaras
6. Devahuti : Harsha and his times
7. Niyogi,R. : The History of the Gahadavalas
8. Sharma Dashrath : Early Chauhan Dynastics
9. Sastri, K.A.N. : The Colas
10. --------do--------- : History of South India
11. Gopalan. R. : The Pallavas of Kanchi
12. Tripathi, R.S. : History of Kanauj
13. Dikshit, R.K. : The Chandelas of Jejakabhukti
14. Majumdar. R. C.& Pusalkar, A.D. (Ed.) : Age of Imperial Kanauj
15. ---------do-------- : Struggle for the Empire
16. Thakur, U. : Hunas in India
17. Thakur, U.& Srivastava, Balram : Dakshina Bharata (in Hindi)
18. Pieres, E.A. : The Maukharis
19. Puri, B.N : History of the Gurjara-Pratiharas

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-III (16/20AIH103) **Ancient Indian Societies**

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit: 4

Course Outcome:

CO1: Student get the basic knowledge that how the human society develop from tribal stage to the formation of State in India
CO2: Critically discuss major cultural structures, events and then shaping the societal context.
CO3: The students acquainted with the social institutions that formed the basis of ancient social system.
CO4: The course aims to study the ancient societies for a better understanding of the overall cultural status of contemporary world civilizations of Mesopotamia, Sumer, Rome and China.

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Sources of social History: Archaeological and Literary.
2. Harappan and Post Harappan Society

Unit - 2

3. Evolution of Society from the tribal stage to the formation of State in North India.
4. Society described in Vedic literature

Unit - 3

5. Social life of Buddhist Period, Mauryas and Kushanas
6. Society during the Gupta Period
7. Early Medieval Society

Unit - 4

8. General Survey of Ancient Indian Society : Sanskaras, Concept of Ashramas, Family system, Caste system, Slavery system, Education system, Ancient Indian Social Philosophy: Purusarth- Asrama and their social context.Origin and development of Varna and Jati,Position of sudras in Ancient India.
9. Society: Mesopotamian, Sumerian, Roman Civilization and Bronze Age Civilization of China

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 103 .1	3	3	3	2	2	3	3	3	2	1
CO 103. 2	3	3	3	2	2	3	3	3	2	1
CO 103. 3	2	3	3	2	2	3	3	3	2	1
CO 103.4	2	3	3	2	1	3	3	3	1	1
AVG.	2.5	3	3	2	1.7	3	3	3	1.7	1

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 103.1	3	3	3	3	3
CO 103.2	3	3	3	3	3
CO 103.3	3	3	2	3	3
CO 103.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED

1. Kane, P.V. : History of Dharmasastra (Relevant Vols.) (English &Hindi)
2. Dutt, N.K. : Origin and Growth of Caste in India.
3. Altekar, A.S. : Position of Women in Hindu Civilization.
4. Prabhu, P.N. : Hindu Social Organization (Englishand Hindi).
5. Sharma, R.S. : Sudras, in Ancient India (English and Hindi).
6. Katiyal, H.S. : Sudras, Slaves and Untouchables in Ancient India.
7. Pandey, R.B. : Hindu Samskaras.
8. Altekar. A.S. : Education in Ancient India.
9. Sharma, R.S. : Light on Early Indian Society and Economy.
10. Sharma, R.S. : Indian Feudalism.
11. Sharma R.S. : Material Culture and Social Formation
12. Channa, D.R. : Slavery in Ancient India.
13. Singh, Y.B. : Social Life in Ancient India.
14. Majumdar, B.P. : Socio-economic History of North India.
15. Chattopadhyaya, S. : Social Life in Ancient India.
16. Mookerji, R.K. : Ancient Indian Education.
17. Chattopadhyaya, B. : Kusana State and Indian Society.
18. Mishra, Jai Shankar : Prachina Bharate Ka Samajik Itihas (in Hindi).
19. Rao, S.R. : Dawn and Devolution of Indus civilization
20. Goyal, S.R. : Visva Ki Prachin Sabhyataon Ka Itihas (In Hindi).
21. Pathak, Sushil Madhava : Visva Ki Prachin Sabhyataon Ka Itihas (In Hindi).
22. Nemisharan Mittal : Prachin Sabhyataein (In Hindi).
23. Rai, U.N. : Visva Ki Prachin Sabhyataon Ka Itihas (In Hindi).
24. Wooley, C. Leonard : The Sumerians.

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-IV (16/20AIH104) **Introduction to Archaeology**

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit: 4

Course Outcome:

CO1: Students get basic knowledge of scope of Archaeology and relation of Archaeology with social sciences & Pure sciences.
CO2: Students get knowledge about development of Archaeology in India and Stratification
CO3: Students get knowledge about exploration and excavation: its preliminaries, staff and equipments, etc.

CO4: Students understand the relative and absolute dating and Chemical treatment and Preservation of Archaeological finds. Students get knowledge about the museum activities and the public awareness towards archaeology

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Definition, Aims and scope of Archaeology. Relations of Natural and Social Sciences with Archaeology
2. Development of Archaeology in the World context.

Unit - 2

3. Development of Archaeology in the India
4. Stratification in Archaeology.

Unit - 3

5. Exploration Methods
6. Excavation Methods

Unit - 4

7. Methods of Dating : Relative and Absolute dating methods
8. Preservation method and Archaeological remains of Antiquities.

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 104 .1	3	3	3	3	1	3	3	3	3	1
CO 104. 2	2	3	3	2	2	3	3	2	3	1
CO 104. 3	3	3	3	3	2	3	3	3	3	1
CO 104.4	2	3	3	1	1	3	3	1	3	1
AVG.	2.5	3	3	2.25	1.5	3	3	2.25	3	1

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 104.1	3	3	3	3	3
CO 104.2	3	3	3	3	3
CO 104.3	3	3	2	3	3
CO 104.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED:

1. Webster, Graham : Practical Archaeology.
2. Wheeler, R.E.M. : Archaeology from the Earth (in English &Hindi).
3. Agarwal, D.P. : Archaeology of India.
4. Agarwal, D.P. & Yadav, M.D. : Dating the Human Past.
5. Agarwal, D.P. & Kusumgar : Pre-historic Chronology and Radio carbon dating in India
6.
7. Agarwal, O.P. : Preservation of Art Objects and Library Materials.
8. Atkinson, R.J. : Field Archaeology.
9. Allchin, B. & R. : The Rise of Civilization in India and Pakistan.
10. Chakrabarti, D.K. : A History of Indian Archaeology
11. Shukla S.P. & Thaplyal, K.K. : Puratattva Praveshika (In Hindi)
12. Srivastava, K.M. : New Era of Indian Archaeology
13. Jai Narain Pandey : PuratattvaVimarsha (In Hindi)
14. Agrawal,O.P. : Care and preservation of museum objects
15. Aiyappan, A. & Satyamurti,S.T. : Handbook of museum technique
16. Bedekar,V.H.(Ed.) : New Museology and Indian museum
17. Biswa,T.K. : Museum and education
18. UNESCO publication, 1960 The organization of museum: practical advice

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-V (16/20AIH105) **Opt. (i) History & Culture of Ancient Haryana**

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit: 4

Course Outcome:

CO1: Students understand the theme of regional history is explored through study of Haryana (Literary and Archaeological).
CO2: Critically analyze the rise of various cultures are explored in the region of Haryana.
CO3: Critically analyze the rise of state formation and new power in the region of Haryana.
CO4: Critically evaluate the efforts of the people of this region in the foreign invasions and its impact on Haryana.

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Sources — Literary and Archaeological.
2. Pre-historic Remains in Haryana.

Unit - 2

3. Salient features and expansion of Proto-historic cultures in Haryana - Early Harappan, Harappan, Late Harappan
4. Painted Grey Ware Culture.

Unit - 3

5. Expansion of the Vedic culture in the Saraswati Valley; Traditional History of the Kurus, the Bharata War and Aftermath.
6. History of the region from the 6th century B.C. to 2nd century B.C.
7. Rise of the Republics.

Unit - 4

8. Extension of the Indo-Greek, Saka-Kushana and Gupta empires.
9. The rise of the Pushpabhuti Dynasty.
10. The rule of Gurjara-Pratiharas, Tomaras and Chahamanas.

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 105 .1	3	3	3	3	1	3	2	3	3	3
CO 105. 2	3	3	3	3	2	3	3	3	3	3
CO 105. 3	3	3	3	2	2	3	2	3	3	3
CO 105.4	3	3	3	2	1	3	1	3	3	3
AVG.	3	3	3	2.5	1.5	3	2	3	3	3

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 105.1	3	3	3	3	3
CO 105.2	3	3	3	3	3
CO 105.3	3	3	2	3	3
CO 105.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED

1. Raychaudhuri, H.C. : Political History of Ancient India.
2. Pargiter, F.E. : Ancient Indian Historical Tradition.
3. Gupta, S.P. (Ed.) & Ramachandran, S.K. : Mahabharata: Myth and Reality.
4. Buddha Prakash : Haryana through the Ages.
5. Buddha Prakash : Glimpses of Ancient Haryana.
6. Yadav, K.C. (Ed.) : Haryana Studies in History and Culture.
7. Yadav, K.C. (Ed.) : Haryana Ka Itihasa (In Hindi).
8. Phadke, H.A. : Haryana - Ancient and Medieval.
9. Lal, B.B. : Earliest Civilization of South Asia.
10. Gupta, S.P. : The Indus, Saraswati Civilization.
11. Suraj Bhan : Excavations at Mitathal (1960) and other Explorations in Sutlaj Yamuna Divide
12. Suraj Bhan : Excavations of Sugh, Journal of Haryana Studies.
13. Verma, D.C. : (*INDIA – THE LAND AND THE PEOPLE*) HARYANA
14. Agrawal, Jagannath : Inscriptions of Haryana, Punjab, H.P., J. & K. and adjoining
15. Phogat, S.R. : Inscriptions of Haryana.
16. Pandey, D.B. : The History and the Coinage of the Yaudheyas.

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-V (16/20AIH105) **Opt. (ii) Women in Ancient India**

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit : 4

Course Outcome:

CO1: Critically evaluate sources and the position and Status of women in Harappan Period.
CO2: Critically evaluate the rules laid down by the Ancient Societies. The rules about sex morality enable us to know the ethical tone of the society and ascertain how far men were prepared to be themselves judged by the standard they had set for Women.
CO3: To evaluate the degree Mauryan and Gupta Period to which women were given a voice in the settlement of marriage, divorce, proprietary rights, Prostitute, servant, as widow place in society and her overall and management of household.
CO4: The History of the position and status of women is therefore of vital importance to the student of Ancient Indian History

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Sources of Women History: Literary and Archaeological
2. Women in Harappan period.

Unit - 2

3. Status of Women in Vedic age: Rigvedic and Later Vedic
4. Women and Religion: Women's place in Brahmanical, Buddhist and Jaina Religions.

Unit - 3

5. Education and Women
6. Women in Mauryan period and Later Mauryan.
7. Women in Gupta Age.

Unit - 4

8. Women in Early Medieval period: Gurjara Partiharas, Palas, Chahamanas, Chandellas Dynasty Early medieval Kashmir.
9. Political Participation of Women in Ancient India.

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 105 .1	3	3	3	3	1	3	2	3	3	3
CO 105. 2	3	3	3	3	2	3	3	3	3	3
CO 105. 3	3	3	3	2	2	3	2	3	3	3
CO 105.4	3	3	3	2	1	3	1	3	3	3
AVG.	3	3	3	2.5	1.5	3	2	3	3	3

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 105.1	3	3	3	3	3
CO 105.2	3	3	3	3	3
CO 105.3	3	3	2	3	3
CO 105.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED

1. Altekar, A.S. : The Position of Women in Hindu Civilization.
2. Gharpure, JR. : Right of Women under Hindu Law, Bombay.
3. Gupta, A.R. : Women in Hindu Society.
4. Kapadia, K.M. : Marriage and Family in India.
5. Agrawal Ashvini : Working Women in Ancient India.
6. Shastri, Sakuntala Rao : Women in Vedic Age.
7. Kapadia, KM. : Marriage and Family in India.
8. Mitter, D.N. : The Position of Women in Hindu Law.
9. Prabhu, P.N. : Hindu Social Organization.
10. Sharma, T. : Women in Ancient India (32 A.D. to 1200 A.D.)
11. Altekar, A.S. : Position of Women in Hindu Civilization.
12. Rajpal ; Women in Early Medieval North India
13. Mishra, Urmila Parkash : Prachin Bharat me Nari
14. Altekar, A.S. : Position of Women in Hindu Civilization
15. Thakur Renu : Women and Society in Early Medieval India: Re-interpreting Epigraphs
16. Singh, Vijay Laxmi : Women and Gender in Ancient India (A Study of Text and Inscriptions

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

M.A. (2nd SEMESTER)

Paper-I (16/20AIH201) Ancient Indian Administration and Polity

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit : 4

Course Outcome:

CO1: To acquaint the students with the major administrative set-up during various period of ancient India.
CO2: To acquaint the students with political ideas and institutions that formed the basis of ancient Indian political system.
CO3: Evaluate and analyze of institutional history that how the institution of state rise and develop in India.
CO4: Critically evaluate the nature of the state changes with the time and dynasty. The aim of the paper is to acquaint the students with intricacies of Administrative system and institutions in ancient India through the ages.

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. State: Theories of Origin, Concept, Nature, Aim and Functions, Sources of Ancient Indian polity.
2. Origin of Political Institution in Ancient India: Concept of Dandniti, types of State, Kingship : Divinity, Absolutism and Curbs, Coronation of King, Mantri Parishad

Unit - 2

3. Political Organization and Institutions referred in Vedic Literature
4. Monarchical and Republican States,Ganarajya and Paur-Janapadas.

Unit - 3

5. Mauryas and their Administration
6. Gupta Polity and Administration
7. Local Self Government in Ancient India

Unit - 4

8. Feudal States and Administration: Pushpabhutis, Palas, Pallavas and Cholas
9. Corporate life: Guilds their organization and functions.
10. Inter-State relations.

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 201 .1	3	3	2	2	2	3	3	2	3	1
CO 201. 2	3	3	2	2	2	3	3	2	3	3
CO 201. 3	3	3	2	2	2	3	3	2	3	1
CO 201.4	3	3	2	2	2	3	3	2	3	1
AVG.	3	3	2	2	2	3	3	2	3	1.5

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 201.1	3	3	3	3	3
CO 201.2	3	3	3	3	3
CO 201.3	3	3	2	3	3
CO 201.4	3	3	2	3	3
AVG.	3	3	2.5	3	3

BOOKS RECOMMENDED

1. Jolly, J. : Hindu Law and Customs.
2. Jaiswal, K.P. : Hindu polity
3. Majumdar, R.C. : Corporate Life in Ancient India.
4. Altekar, A.S. : State and Government In Ancient India
5. Dikshitar, V.R.R. : Hindu administrative institutions
6. Ghosal,U.N. : A History of Hindu Political Ideas
7. Prasad, B. : Theory of State In Ancient India
8. Sharma, R.S. : Some Aspects of Political Ideas and Institution In Ancient India
9. Thapar, R. : The Penguin History of Early India from Origin to A.D. 1300
10. Sinhga , H.N. : The development of Hindu polity
11. Vidhyalkar , S. : *Prachin Bharat ki Shasan Sanstay Aur Rajnitik Vichar*
12. Shukala, D. : *Prachin Bharat Main Jantantra*(InHindi)
13. Mittal,P. : *Prachin Bharat Mai Rajnitik Vichar Thatha Sanstaye*(InHindi)
14. Tiwari, H. : *Prachin Bharta Mai Rajya Aur Nayapalika*(InHindi)
15. Altekar, A.S. : *Prachin Bhrat Mai Prasan Padati*(InHindi)
16. Mookherje,R. : Local Government In Ancient India
17. Verma , V.V. : *Vedic Rajnitishastra*(InHindi)
18. Singh, Jagbir : *Prachina Bharat Men Pratinidhi Shasan*(InHindi)

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-II (16/20AIH202) **Science & Technology in Ancient India**

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit : 4

Course Outcome:

CO1: To acquaint the students with the evolution and development of science and technology through the ages in Ancient India

CO2: Evaluate and analyze the history of various fields of science viz. Physics, Chemistry, Mechanical, Astronomy, Mathematics and Medicine etc.

CO3: Explain and acquainted with the internal evolution and external influences on science & technology in Ancient India.

CO4: Formulate logical arguments substantiated in early medieval period.

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Science & Technology: Sources
2. Prehistoric Tools Techniques: Paleolithic tools, Mesolithic tools, Neolithic tools

Unit - 2

3. Development of Science & Technology in Harappan period
4. Development of Science & Technology in Vedic Literature

Unit - 3

5. Advancement of Science &Technological in Mauryan period
6. Development of Science & Technology in Kushanas, Satvahanas and Southern India.

Unit - 4

7. Science & Technology in Early Medieval period

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 202 .1	3	3	2	2	2	3	3	2	3	1
CO 202. 2	3	3	2	2	2	3	3	2	3	3
CO 202. 3	3	3	2	2	2	3	3	2	3	1
CO 202.4	3	3	2	2	2	3	3	2	3	1
AVG.	3	3	2	2	2	3	3	2	3	1.5

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 202.1	3	3	3	3	3
CO 202.2	3	3	3	3	3
CO 202.3	3	3	2	3	3
CO 202.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED

1. Rao, S.R. : Dawn and Devolution of Indus Civilization.
2. Gopalkrishnan, N. : Indian Scientific Heritage, IISH
3. Ray, N.R. : Technology and Social Change in Early Indian History
4. Lal, B.B. & Gupta, S.P. : Frontier of Indus Civilization
5. Bag, A.K. (ed.) : History of Technology, Vol.I.
6. Bhardwaj, H.C. : Aspects of Ancient Indian Technology
7. Bhardwaj, H.C. & Sharma, V.L. : Technology Tools and Appliances
8. Biswas, A.K. & S. Biswas : Minerals and Metals in Ancient India, & Vol. I
9. Bose, D.M., Sen,S.N. & Subbarayappa, B.V. : A Concise History of Science In India
10. Chattopadhyaya, B.D. : History of Science and Technology in Ancient India, Vol. II
11. Chattopadhyaya, B.D. : History of Science & Technology in Ancient India
12. Derry,T.K.& William, T.I. : A Short History of Technology
13. Forbes,R.J. : Studies in Ancient Technology
14. Hegde,K.T.M. : An Introduction to Ancient Metallurgy
15. Kaye,G.R. : Indian Mathematics
16. Panday,L.P. : Botanical Sciences and Economic Growth in Ancient India
17. Rao, S. Balchandra : Indian Mathematics and Astronomy-Some Landmarks
18. Sankalia,H.D. : Some Aspects of Prehistoric Technology in India
19. Saraswati, S.P. : Geometry in Ancient India
20. Subbarayappa, B.V. : History of Sciences in Ancient India

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-III (16/20AIH203) Ancient Indian Economy

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit: 4

Course Outcome:

CO1: To acquaint the student with details of economic history of Ancient India. It is proposed to cover various aspects of economic ideas and economic institutions in ancient India and economy of Paleolithic period .

CO2: To Students get basic knowledge about the Harappan and Vedic period economy.

CO3: To Students get basic knowledge about the imperial system i.e Gupta and Post-Gupta Economy, Feudal Economy and condition of peasantry and labour.

CO4: To acquaint the Students understanding the Agrarian Economy i.e. Land System-land Revenue, Ownership of Land, Irrigation System. To acquaint the Students with understanding the patterns of Trade and Commerce and Foreign Trade with special reference to Western and South East Asia.

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Sources of economic history : Stone Age
2. Paleolithic , Mesolithic age and Neolithic revolution
3. Harappan & Post Harappan Economy

Unit - 2

4. Economic life of Vedic people
5. Economic life during Mauryas
6. Economic life during Guptas

Unit - 3

7. Trade and Commerce during early medieval India
8. Pattern of Economic Developments in South India

Unit - 4

9. Rise and growth of Feudalism in Ancient India.
10. General Survey of Ancient Indian Economy
    (i) Trade and Commerce: Internal, External, Trade routes Indo-roman contacts and Maritime Trade of South India.
    (ii) Economic Institutions & Guilds

(iii) Temple Economy

(iv) Peasantry, Land Grants, Land Revenue System, Irrigation System

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 203 .1	3	3	3	2	2	3	3	3	2	1
CO 203. 2	3	3	3	2	2	3	3	3	2	1
CO 203. 3	2	3	3	2	2	3	3	3	2	1
CO 203.4	2	3	3	2	1	3	3	3	1	1
AVG.	2.5	3	3	2	1.7	3	3	3	1.7	1

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 203.1	3	3	3	3	3
CO 203.2	3	3	3	3	3
CO 203.3	3	3	2	3	3
CO 203.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED:

1. Sharma, R.S. : Light on Early Indian Society and Economy.
2. Sharma, R.S. : Indian Feudalism.
3. Sharma R.S. : Material Culture and Social Formation
4. Gopal, L. : The Economic life in Northern India.
5. Sircar, D.C. : Land Grants and Feudalism in Ancient India.
6. Bose. A.N. : Social and Rural Economy of Northern India. 2 Vols.
7. Yadav, B.N.S : Socio-economic History of Northern India (10th to 12^{th}Centuries)
8. Bandopadhyaya, N.C. : Economic life and progress in Ancient India.
9. Maity, S.K. : Economic life and progress in Ancient India.
10. Moti Chandra : Sarthavaha.
11. Adhya, G.L. : Early Indian Economies.
12. Achchhe Lal : Prachina Bharate Men Krishi (InHindi)
13. Majumdar, B.P. : Socio-economic History of NorthIndia.
14. Allchin, B.R. : Rise of civilization in India and Pakistan.

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-IV (16/20AIH204) **Early Historic Archaeology**

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit: 4

Course Outcome:

CO1: Students get a basic knowledge about the relationship of Archaeology with History. Students understand the Characteristics and Chronology of Northern Black Polished Ware Culture

CO2: To familiarize the students to the theoretical basis of conservation and preservation. Historical Urbanization

CO3: Public Awareness: Museums activities and Antiquarian Law and significance of pottery.

CO4: The broad objective of the course is to inform the students about the major excavations of India.

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Relationship of Archaeology with History.
2. Northern Black Polished Ware Culture: Extent, Chronology and Characteristics.

Unit - 2

3. Historical Urbanization
4. Methods of conservation and preservation.

Unit - 3

5. Archaeology and Public Awareness; Museums - display of antiquities and Antiquarian Law
6. Significance of Pottery

Unit - 4

7. Detailed study of the following excavations:
   (i) Hastinapur
   (ii) Atranjikhera
   (iii) Kausambi
   (iv) Taxila
   (v) Thanesar
   (vi) Vaishali
   (vii) Nagarajunikonda
   (viii) Arikamedu
   (ix) Bramagiri
   (x) Sishupalgarh

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 204 .1	3	3	3	3	1	3	3	3	3	1
CO 204. 2	2	3	3	2	2	3	3	2	3	1
CO 204. 3	3	3	3	3	2	3	3	3	3	1
CO 204.4	2	3	3	1	1	3	3	1	3	1
AVG.	2.5	3	3	2.25	1.5	3	3	2.25	3	1

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 204.1	3	3	3	3	3
CO 204.2	3	3	3	3	3
CO 204.3	3	3	2	3	3
CO 204.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED

1. Mishra, F. : Researches in Archaeology and Conservation.
2. Paddayya, K. : New Archaeology arid it's Aftermath.
3. Srivastava, K.M : New Era of Indian Archaeology.
4. Sharma, G.R. : Excavations at Kausambi.
5. Marshall, Sir, John : Guide to Taxila.
6. Ghosh, A. (Ed.) : Archaeological Remains, Monuments and Museums, 2 Vols.
7. Ghosh, A. : The City in Early Historical India.
8. Ramchandran,T.N. : Najarjunikonda
9. Subarmanyan, E.(Ed.) : Nagarjunikonda
10. Ojha,S. : *Bharatiya Puratattva*
11. Banerjee,B.P. : The Iron Age of India
12. Sinha,B.P. : Potteries in Ancient India
13. Gaur,R.C. : Excavation at Antrajikhera
14. Dhavalikar, M.K. : Historical archaeology of India

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-V (16/20AIH205) Opt. (i) Archaeological Sites &Ancient Monuments in Haryana

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit : 4

Course Outcome:

CO1: Students understand the cultural study by the excavated Harappan sites of Haryana
CO2: Critically analyze the rise of various cultures are explored in the region of Haryana.
CO3: The broad objective of the course is to inform the students about the Ancient Cities and Monuments of Haryana
CO4: Students understand the Historiography of Archaeology in Haryana

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

(A) Study of the excavated sites:–

i) Harappan & Post Harappan Sites (Banawali, Balu, Rakhigarhi, Kunal, Mithathal, Bhirrana, Farmana, Bhagwanpura, Daulatpur, Mirzapur, Jognakhera Badli and Lohat)

Unit - 2

ii) Early Historic & Historic Sites (Khokhrakot, Agroha, Sugh and Thanesar)

Unit - 3

(B) Ancient Cities and Monuments of Haryana.

Unit - 4

(C) Historiography of the Archaeology of Haryana

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 205 .1	3	3	3	3	1	3	2	3	3	3
CO 205. 2	3	3	3	3	2	3	3	3	3	3
CO 205. 3	3	3	3	2	2	3	2	3	3	3
CO 205.4	3	3	3	2	1	3	1	3	3	3
AVG.	3	3	3	2.5	1.5	3	2	3	3	3

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 205.1	3	3	3	3	3
CO 205.2	3	3	3	3	3
CO 205.3	3	3	2	3	3
CO 205.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED

1.	Pargiter, F.E.	:	Ancient Indian Historical Tradition.
2.	Gupta, S.P. (Ed.) & Ramachandran, S.K.	:	Mahabharata: Myth and Reality.
3.	Buddha Prakash	:	Haryana through the Ages.
4.	Buddha Prakash	:	Glimpses of Ancient Haryana.
5.	Yadav, K.C.	:	Freak With The Past-A Case for Preserving Precious Heritage of Haryana
6.	Yadav, K.C. (Ed.)	:	Haryana Studies in History and Culture.
7.	---------do----------	:	Haryana Ka Itihasa (In Hindi).
8.			
9.	Phadke, H.A.	:	Haryana - Ancient and Medieval.
10.	Gupta, S.P.	:	The Indus, Saraswati Civilization.
11.	Suraj Bhan	:	Excavations at Mitathal (1960) and other Explorations in Sutlaj Yamuna Divide
12.	Suraj Bhan	:	Excavations of Sugh, Journal of Haryana Studies.
13.	Verma, D.C.	:	(*INDIA – THE LAND AND THE PEOPLE*) HARYANA
14.	Agrawal, Jagannath	:	Inscriptions of Haryana, Punjab, H.P., J. & K. and adjoining
15.	Phogat, S.R.	:	Inscriptions of Haryana.

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-V (16/20AIH205) Opt. (ii) Socio-economic Status of Women in Ancient India

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit : 4

Course Outcome:

CO1: This course will examine some broad debates and theoretical formulation around the status of women in ancient India

CO2: Students understand the Women Education and Working women

CO3: Students understand the Social Institutions, Parda and Sati System in Ancient India

CO4: Students understand the Women and Culture, Attitude towards the Woman and her place in the society

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Position of Women: Childhood and Marriage.
2. Customary and Legal status - crime and punishment, proprietary rights.

Unit - 2

3. Women and Work - Working women, Prostitute and Servants.
4. Education and women.

Unit - 3

5. Social Institutions and Women — Marriage, Samskara, Divorce.
6. Parda and Sati System in Ancient india.

Unit - 4

7. The Position of the Widow.
8. Women and Culture - Women representation and participation in social life, literature.
9. Attitude towards the Woman and her place in the society.

Pedagogy of the course work: *The students are taught with the help of slides, photographs, In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 205 .1	3	3	3	3	1	3	2	3	3	3
CO 205. 2	3	3	3	3	2	3	3	3	3	3
CO 205. 3	3	3	3	2	2	3	2	3	3	3
CO 205.4	3	3	3	2	1	3	1	3	3	3
AVG.	3	3	3	2.5	1.5	3	2	3	3	3

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 205.1	3	3	3	3	3
CO 205.2	3	3	3	3	3
CO 205.3	3	3	2	3	3
CO 205.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED

1. Altekar, A.S. : The Position of Women in Hindu Civilization.
2. Gharpure, JR. : Right of Women under Hindu Law, Bombay.
3. Gupta, A.R. : Women in Hindu Society.
4. Kapadia, K.M. : Marriage and Family in India.
5. Agrawal Ashvini : Working Women in Ancient India.
6. Shastri, Sakuntala Rao : Women in Vedic Age.
7. Kapadia, KM. : Marriage and Family in India.
8. Mainu Heary : Ancient Law.
9. Mitter, D.N. : The Position of Women in Hindu Law.
10. Prabhu, P.N. : Hindu Social Organization.
11. Sharma, T. : Women in Ancient India (32 A.D. to 1200 A.D.)
12. Altekar, A.S. : Position of Women in Hindu Civilization.
13. Rajpal ; Women in Early Medieval North India
14. Mishra, Urmila Parkash : Prachin Bharat me Nari
15. Altekar, A.S. : Position of Women in Hindu Civilization
16. Thakur Renu : Women and Society in Early Medieval India: Re-interpreting Epigraphs
17. Singh, Vijay Laxmi : Women and Gender in Ancient India (A Study of Text and Inscriptions

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Open Elective Course (16/20AIH206) Outline of Ancient Indian History

Marks: 40
Internal Assessment: 10
Time: 3 Hours
Credit: 2

Course Outcome:

CO1: Students understand the sources of Indian History and critically evaluate the knowledge of Stone Age in India.
CO2: Critically analyzed the Indus civilization, Vedic and Post-Vedic Civilization.
CO3: Critically analyzed the rise of Magadha Empire and Political condition of India on the eve of Alexander's Invasion. Critically evaluated about the rise of Mauryan Empire, its administration and downfall.
CO4: Students able to understand about the republics i.e. Yaudheyas, Kunindas, Audumbras and Political condition of India before the rise of Gupta. The students came across the general survey of Political History of South India

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Meaning , Nature & Scope of History
2. Sources of Ancient Indian History.
3. Stone Age, Neolithic Culture.

Unit - 2

4. The Indus Valley Civilization
5. Vedic Age.

Unit – 3

6. Religious Movements: Jainism and Buddhism,.
7. The Mauryan Age: Chandergupta Maurya and Ashoka.

Unit - 4

8. Gupta Age.
9. Pushabhuti Dynasty : HarshaVardhan & his achievements.

Pedagogy of the course work: *The students are taught with the help of slides, photographs, In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 206 .1	3	3	3	3	1	3	2	3	3	3
CO 206. 2	3	3	3	3	2	3	3	3	3	3
CO 206. 3	3	3	3	2	2	3	2	3	3	3
CO 206.4	3	3	3	2	1	3	1	3	3	3
AVG.	3	3	3	2.5	1.5	3	2	3	3	3

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 206.1	3	3	3	3	3
CO 206.2	3	3	3	3	3
CO 206.3	3	3	2	3	3
CO 206.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED

1. a. Majumdar, R.C. & Pusalkar, A.D. (Ed.) : Vedic Age.

b. ---------do-------- : Age of Imperial Kanauj

2. ---------do-------- : Struggle for the Empire

3. Raychaudhuri, H.C. : Political History of Ancient India (6th Ed.) (English and Hindi)

4. Thapar, R. : Ashoka and the Decline of the Mauryas (English and Hindi).

5. Pandey, V.C. : Prachin Bharat Ka Sanskritic Evam Rajnitic Itihas (in Hindi)Vol. I

6. Mukherjee, B.N. : The Rise and Decline of the Kusana Empire

7. Majumdar & Altekar : The Vakataka-Gupta Age

8. Gupta P.L. : Gupta Samrajya (in Hindi)

9. Devahuti : Harsha and his times

10. Singh, U. : A History of ancient and early medieval India from stone age To12 century

11. Thakur, U. & Srivastava, Balram : Dakshina Bharata (in Hindi)

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

M.A. (3nd SEMESTER)

Paper-I (16/20AIH301) Historiography

(Compulsory Paper)

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit: 4

Course Outcome:

CO1: The broad aim is to acquaint students with the basic understanding of the subject history, its philosophy and other basic ideas.

CO2: Students developed their ability to assess critically historical analysis and argument past and present. Students gained an awareness of recent and contemporary debates in the theory, practice of historical writing and access the debate among historians.

CO3: Students gained insight into how historical arguments have become aware of Historiographical traditions outside the West.

CO4: Students had the opportunity to think reflexively about the nature of the historical enterprise within society.

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Meaning, Nature and Scope of History.
2. Relation of History with other disciplines: Archaeology, Geography, Anthropology and Sociology.

Unit - 2

3. Traditions of Historical Writings: Greco-Roman Tradition, Chinese Tradition and Ancient Indian Tradition.
4. Main Trends of Medieval Historiography — Western, Arabic, Persian and Indian.

Unit - 3

5. Modern Writings on Ancient Indian History with special reference to R.C. Majumdar, K.P. Jayaswal and D.R. Bhandarkar.
6. Approach to Indian History: D.D. Kosambi, R.G. Bhandarkar, H.C. Ray Chaudhury.

Unit - 4

7. Main Trends in Modern Historiography with reference to Ranke, Marx, Toynbee and E.H. Carr.
8. Approaches to History: Theological, Orientalist, Imperialist, Nationalist and Marxist.
9. Regional History writing.

Pedagogy of the course work: *The students are taught with the help of slides. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 301 .1	3	3	3	2	2	3	3	2	3	--
CO 301. 2	3	3	3	2	2	3	3	2	3	--
CO 301. 3	3	3	3	2	2	3	3	3	3	3
CO 301.4	3	3	3	2	1	3	3	3	3	1
AVG.	3	3	3	2	1.7	3	3	2.5	3	1

C0,s and PO MAPPING MATRIX

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 301.1	3	3	3	3	3
CO 301.2	3	3	3	3	3
CO 301.3	3	3	2	3	3
CO 301.4	3	3	2	3	3
AVG.	3	3	2.5	3	3

BOOKS RECOMMENDED

1. Pathak,V.S. : Ancient Indian Historians
2. Pandey, G.C. (Ed.) : Itihasa Darshana : Swroop Evam Siddhanta
3. Buddha Prakash : Itihasa Darshana
4. Collingwood, R.G. : The Idea of History
5. Warder, A.K. : An Introduction to Indian Historiography
6. Sen, S.P. (Ed.) : Historians & Historiography in Modern India
7. Ghosal, U.N. : The Beginnings of Indian Historiography and other Essays
8. Devahuti (Ed.) : Problems of Indian Historiography
9. Barnes, H.E. : A History of Historical Writing
10. Pandey, L.P. : *Bhartiya Itihas-Darshana* (In Hindi)

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

OR

16/20AIH301-VD	**Dissertation**	**Viva-voce (20)**	**Dissertation (80)**	**100**	**Credit : 4**

Paper-II (16/20AIH302) Pre-Historic India

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit: 4

Course Outcome:

CO1: Critically evaluate the knowledge of human evolution in world scenario as well as India. The knowledge of Paleo-environment during the Stone Age in India especially from- Sohan, Narmada, Godavari and Belan valleys.

CO2: General background of world Prehistory. Familiarize with the Lower, Middle and Upper Paleolithic

CO3: Mesolithic and Neolithic cultures of India. Distribution, environment, typo-technology of tools, subsistence, art, chronology, evidences from important sites

CO4: Stone Tool Technology and their uses; Understand the Prehistoric art.

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Indian Prehistory: Meaning and Scope, Interpretation of Prehistoric Sources
2. Pleistocene Environment; Climatic fluctuations during Pleistocene period

Unit - 2

3. General background of world Prehistory.
4. Lower Paleolithic Cultures of India: Soanian and Madrasian.
5. Middle Paleolithic and Upper Paleolithic Cultures of India.

Unit - 3

6. Mesolithic Cultures of India Characteristic features, Distribution and Chronology.
7. Neolithic cultures of India: Beginning of agriculture and animal domestication. Regional variations - North India, Belan Valley and South India.

Unit - 4

8. Stone Tools, Technology and their uses.
9. Prehistoric art.

Pedagogy of the course work: *The students are taught with the help of slides, photographs, topographical maps, political maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 302 .1	3	3	2	2	2	3	3	2	3	1
CO 302. 2	3	3	2	2	2	3	3	2	3	3
CO 302. 3	3	3	2	2	2	3	3	2	3	1
CO 302.4	3	3	2	2	2	3	3	2	3	1
AVG.	3	3	2	2	2	3	3	2	3	1.5

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 302.1	3	3	3	3	3
CO 302.2	3	3	3	3	3
CO 302.3	3	3	2	3	3
CO 302.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED

1. Agrawal, D.P. : The Archaeology of India.
2. Chakrabarti, D.K. : A History of Indian Archaeology.
3. Allchin, B. & R. : The Rise of Civilization in India and Pakistan.
4. Jain, K. C. : Prehistory and Protohistory of India.
5. Jayaswal, Vidula : Palaeohistory of India
6. -------do---------- : *Bhartiya Itihas Ke Aadi Charan Ki Ruprekha* (in Hindi)
7. -------do---------- : *Bhartiya Itihas Ka Madhya Praster Yug* (in Hindi)
8. Sankalia, H.D. : Stone Age Tols: Their Techniques, Name and Probable Function
9. Sankalia, H.D. : Prehistory and Protohistory of India and Pakistan
10. Verma, Radhakant : *Bharatiya Pragaitihasic Sanakritiyan* (in Hindi)
11. Clark, J.G.D. : Archaeology and Society: Reconstructing the Prehistoric Past
12. Pandey,J.N. : *Puratattva Vimarsha* (In Hindi).
13. Bhattacharya, D.K : Prehistoric Archaeology
14. Daniel Glyn : The Origins and Growth of Archaeology.
15. Rao, S.R. : Marine Archaeology of India Ocean Countries.
16. Wheeler, R.E.M. : Archaeology from the Earth
17. Paddayya, K. : New Archaeology and its Aftermath.
18. Sankalia, H.D. : Prehistoric Art in India

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-III (16/20AIH303) **Proto-Historic India**

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit : 4

Course Outcome:

CO1: Students understand the nature of archaeological sources, terms &meanings and interpretation.
CO2: The Harappan Culture – Origin, extent, chronology, factors of urbanization, trade, script, religion, arts, craft and factors of decline.
CO3: Students gained knowledge of Post Harappan cultures in Punjab, Haryana, Rajasthan, Uttar Pradesh and Gujarat. Students also understand the OCP, PGW and character of various Chalcolithic cultures in Indian context
CO4: Critically analyze about Copper Hoard – antiquity of Iron in India, NBP and South Indian Megalithic Culture.

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Indian Proto-history: Meaning and Scope, Interpretation of Proto-historic Sources.
2. A Survey of Early Harappan Cultures.

Unit - 2

3. Harappan Civilization: Development, extent and decline.
4. Late Harappan

Unit - 3

5. General Survey of the Post-Harappan Cultures of India: Ocher colored Pottery.Chalcolithic cultures of Central India, Deccan and Rajasthan.
6. Painted Grey Ware Culture

Unit - 4

7. The Iron Age
8. Northern Black Polished Ware Culture.
9. Megalithic Cultures — Burial types and their salient features.

Pedagogy of the course work: *The students are taught with the help of slides, photographs, topographical maps, political maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 303 .1	3	3	3	2	2	3	3	3	2	1
CO 303. 2	3	3	3	2	2	3	3	3	2	1
CO 303. 3	2	3	3	2	2	3	3	3	2	1
CO 303.4	2	3	3	2	1	3	3	3	1	1
AVG.	2.5	3	3	2	1.7	3	3	3	1.7	1

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 303.1	3	3	3	3	3
CO 303.2	3	3	3	3	3
CO 303.3	3	3	2	3	3
CO 303.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED

1. Agarwal, D.P. : Archaeology of India
2. Allchin,B.& R : The Rise of Civilization in India and Pakistan
3. Agarwal, D.P. & Chakrabarti, D.K. : Essays in Indian Proto history
4. Nautiyal, K.P. : Proto historic India
5. Dhavlikar, M.K. : Indian Proto history
6. Jam, K.C. : Prehistory and Proto-history of India
7. Lal B.B. : The Earliest Civilization of South Asia
8. Pande, Jainarain : Puratattva Vimarsh (in Hindi)
9. Sankalia, H.D. : Prehistory and Proto-history of India and Pakistan
10. Verma, Radha Kant : Bhartiya Pragatihasik Sanskritiyan
11. Sankalia, H.D.;Deo,S.B. & Ansari, Z.D. : Excavation at Ahar

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-IV (16/20AIH304) **Elements of Ancient Indian Epigraphy**

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit: 4

Course Outcome:

CO1: Critically analyze the Inscriptions as a source of Indian History.
CO2: Students will be able to understand the origin and antiquity of art of writing in India as well as origin and development of Brahmi and Kharoshthi Script.
CO3: Development of Post Mauryan script in Ancient India.
CO4: Critically analyze the various aspects of the most important inscriptions and their importance as a source of Indian History.

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Epigraphy as source of history: origin and Antiquity of the Art of Writing in India

Unit - 2

2. The Indian Script : Harappan Script, Brahmi and Kharosthi, Ashokan Brahmi Alphabets and its evolution

Unit - 3

3. Development of Post Mauryan script in Ancient India.

Unit - 4

4. A historical and cultural study of the following inscriptions:
   (i) Asokan Rock Edict XIII (Shahbazgarhi).
   (ii) Besnagar Garuda Pillar Inscription of Heliodors.
   (iii) Hathigumpha Inscription of Kharavala
   (iv) Junagadh Inscription of Rudradaman.
   (v) Allahabad Pillar Inscription of Samundargupta.
   (vi) Mehrauli Iron Pillar Inscription of Chandra
   (vii) Junagadh Inscription of Skandagupta.
   (viii) Basakhera Copper Plate of Harsha.
   (ix) Aihole Inscription of Pulakesin-II.
   (x) Sagartal Inscription of Mihirabhoja.

Pedagogy of the course work: *The students are taught with the help of slides, photographs, political maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 304 .1	3	3	3	3	1	3	3	3	3	1
CO 304. 2	2	3	3	2	2	3	3	2	3	1
CO 304. 3	3	3	3	3	2	3	3	3	3	1
CO 304.4	2	3	3	1	1	3	3	1	3	1
AVG.	2.5	3	3	2.25	1.5	3	3	2.25	3	1

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 304.1	3	3	3	3	3
CO 304.2	3	3	3	3	3
CO 304.3	3	3	2	3	3
CO 304.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED

1. Pandey, R.B. : Indian Palaeography.
2. Pandey, R.B. : Some Historical and Literary Inscriptions.
3. Dani, A.H. : Indian Palaeogrophy.
4. Ojha, G.H. : Bharatiya Prachina Lipimala (in Hindi).
5. Sircar, D.C. : Select Inscriptions, Vol. I.
6. Bhandarkar, D.R. : Carmichael Lectures, 1921.
7. Gupta, P.L. : Prachin Bharat ke Pramukh Abhilekh (inHindi).
8. Goyal, S.R. : *Prachin Bharatiya Abhilekh Sanghrah*, Vol. I & II (in Hindi)
9. Thaplyal, K.K. : Inscriptions of Maukharis, Vardhanas and Later Guptas.
10. Buhler, G. : Indian Paleography.
11. Barua, B.M. : Ashoka and His Inscriptions.

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-V (16/20AIH305) **Elements of Ancient Indian Art**

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit : 4

Course Outcome:

CO1: The aim of this paper is to acquaint the students with the beginning and development of different art styles in different through the Ages in Ancient India in various materials and paintings.

CO2: The emphasis will be on the characteristics of Indian arts and paintings reflecting the social, economic, religious aspects of our ancient traditions representing various regions and periods.

CO3: Impact and assimilation of foreign art traditions on Indian art will also be studied. This will help the students to learn about the rich heritage of our country.

CO4: The emphasis will be on the characteristics of early medieval Indian arts and Paintings of Ajanta and Bagh.

Note: -At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Pre-historic painting.
2. Harappan Art: Designs on pottery and seals, Terracotta figurines, Stone Images, Bronze Images.

Unit - 2

3. Mauryan Art: Folk Art, Ashokan Pillars.
4. The form and contents of the Sunga art.

Unit - 3

5. Saka-Kushana Art: Mathura and Gandhara school of Art
6. Gupta Art.

Unit - 4

7. Early medieval art with special reference to the Chandellas, the Palas, the Chalukyas, the Cholas and the Pallavas.
8. Paintings of Ajanta and Bagh.

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 305 .1	3	3	3	3	1	3	2	3	3	3
CO 305. 2	3	3	3	3	2	3	3	3	3	3
CO 305. 3	3	3	3	2	2	3	2	3	3	3
CO 305.4	3	3	3	2	1	3	1	3	3	3
AVG.	3	3	3	2.5	1.5	3	2	3	3	3

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 305.1	3	3	3	3	3
CO 305.2	3	3	3	3	3
CO 305.3	3	3	2	3	3
CO 305.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED

1. Agarwala, V.S. : Bharatiya Kala (In Hindi)
2. Brown, Percy : Indian painting
3. Chander, Lokesh : Bharat ki Chitarkala ka Sankshipat Itihas (In Hindi)
4. Gupt, Jagdish : Pragatihasic Chitrkala (In Hindi)
5. Khre, M. D. : Bagh ki Guphayen (In Hindi)
6. Mishra, R.N. : Bhartiya Murtikala (In Hindi)
7. Ray, N.R. : Mauryan and Post-Mauryan Art (In English & Hindi)
8. Ray,N.R. : Bharatiya Kala Ka Adhyayan (In Hindi)
9. Rowland, B. : The Art and Architecture of India
10. Srivastava, Brijbhushan : Prachin Bhartiya Pratima Vigyan Evam Murtikala (In Hindi)
11. Satyawadi, Sudha : Proto-historic Pottery of Indus Civilization, study of Painted Motifs
12. Sankalia, H.D. : Prehistoric Art in India
13. Saraswati, S.K. : A Survey of Indian Sculpture.
14. Agrawala, P.K. : Prachina Bharatiya Kala Evam Vastukala (in Hindi)

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

(GROUP-B)

Paper-I (16/20AIH301) **Historiography**
(Compulsory Paper same as in Group-A)
OR
Dissertation
(Compulsory same as in Group-A)

Paper-II (16/20AIH306) **Ancient Indian Epigraphy**

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit : 4

Course Outcome:

CO1: Critically analyze the Inscriptions as a source of Indian History. Students will be able to understand the origin and antiquity of art of writing in India

CO2: Origin and development of Brahmi and Kharoshthi Script. Students learn the decipherment and transliteration of Brahmi and Kharoshthi script.

CO3: Critically analyze the various aspects of inscriptions and their importance as a source of Indian History.

CO4: Students get the basic knowledge about the historical and cultural importance of some important inscriptions from various dynasties.

Note: -At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Epigraphy and historical reconstruction, origin and Antiquity of the Art of Writing in India

Unit - 2

2. The Indian Script : Harappan Script, Brahmi and Kharosthi, Ashokan Brahmi Alphabets and its evolution

Unit - 3

3. A cultural and historical study of the following:
   - (i) Ashokan R.E. XIII (Girnar)
   - (ii) Asokan R.E. XIII (Shahbazgarhi)
   - (iii) Sarnath Pillar Edict of Asoka
   - (iv) Bairat Inscription (Bhabru Edict)
   - (v) Besnagar Garuda Pillar Inscription of Heliodorus
   - (vi) Hathigumpha Inscription of Kharavala
   - (vii) Janagarh Inscription of Rudradaman

Unit - 4

- (viii) Allahabad Pillar Inscription of Samudragupta
- (ix) Mehrauli Iron Pillar Inscription of Chandra
- (x) Bhitari Pillar Inscription of Skandagupta
- (xi) Aphsad Inscription of Adtyasena

(xii) Banskhera Copper- Plate of Haryana.
(xiii) Aihole Inscription of Pulakesin II
(xiv) Khalimpur Copper-Plate of Dharamapala
(xv) Sanjan Copper-Plates of Amoghavarsha

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 306 .1	3	3	2	2	2	3	3	2	3	1
CO 306. 2	3	3	2	2	2	3	3	2	3	3
CO 306. 3	3	3	2	2	2	3	3	2	3	1
CO 306.4	3	3	2	2	2	3	3	2	3	1
AVG.	3	3	2	2	2	3	3	2	3	1.5

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 306.1	3	3	3	3	3
CO 306.2	3	3	3	3	3
CO 306.3	3	3	2	3	3
CO 306.4	3	3	2	3	3
AVG.	3	3	2.5	3	3

BOOKS RECOMMENDED

1. Hultzsch (Ed.) : Corpus Inscription Indicarum Vol. I
2. Konow, S. (Ed.) : Corpus Inscription Indicarum Vol. II
3. Sircar, D.C. : Select Inscriptions, Vol. I
4. Sircar, D.C. : Indian Epigraphy
5. Pandey, R.B. : Asoka Ke Abhilikha (in Hindi)
6. Ram, Sadhu : Some Inscription of Asoka, Guptas,Mukharis and Others
7. Buhler, G. : Indian Paleography (Indian Studies: Past and Present)
8. Dani, A.H. : Indian Paleography.
9. Pandey, R.B. : Indian Paleography.
10. Ojha, G.H. : Bharatiya Prachina Lipimala (In Hindi)
11. Upadhayaya, V. : Bharatiya Abhilekhon Ka Adhyayana(in Hindi)
12. Bhandarkar, D.R. : Asoka.
13. Barua, B.M. : Asoka and His Inscriptions.
14. Barua, B.M. : Inscriptions of Asoka.

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-III (16/20AIH307) **Ancient Indian Numismatics**

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit: 4

Course Outcome:

CO1: Critically analyze the coins as a source of Indian History and Numismatic studies in India. Students will be able to understand the origin, evolution and antiquity of coin in India.

CO2: Students will be able to understand the Punch-Marked Coins and Coinage of the Indo-Greeks

CO3: Students will obtain the interpretation of the numismatic iconography as an important source for historical and artistic studies. Students will be able to understand the Tribal Coins and Andhra-Satavahana Coins also.

CO4: Students will learn how identify coins of several periods and understand the decipherment and transliteration of ancient Indian coins.

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Numismatics: Definition and importance as source of History.
2. Origin and Antiquity of Coinage in India.

Unit - 2

3. Punch-Marked Coins-Chronology, Classification, distribution and symbols.
4. Coinage of the Indo-Greeks

Unit - 3

5. Tribal Coins: Yaudheyas, Kunidas and Audumbaras. Mitra Coins of Ahiehhatra and Kausambi.
6. Andhra-Satavahana Coins: Salient Features and Regional Distribution.

Unit - 4

7. Coinage of the Kushanas
8. Coins of Sakas, The Indo-Sassanians and the Hunas.
9. Gupta Coins

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 307 .1	3	3	3	2	2	3	3	3	2	1
CO 307. 2	3	3	3	2	2	3	3	3	2	1
CO 307. 3	2	3	3	2	2	3	3	3	2	1
CO 307.4	2	3	3	2	1	3	3	3	1	1
AVG.	2.5	3	3	2	1.7	3	3	3	1.7	1

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 307.1	3	3	3	3	3
CO 307.2	3	3	3	3	3
CO 307.3	3	3	2	3	3
CO 307.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOK RECOMMENDED

1. Cunningham, A. : Coins of Ancient India.
2. Sastri, K.A.N. (Ed.) : Comprehensive History of India,Vol.II
3. Altekar, A.S. : Coinage of the Gupta Empire (In Hindi & English)
4. Shastri, A.M. (Ed.) : Coinage of the Satavahans and Coins from Excavations.
5. Chattopadhyaya, B. : The Age of the Kusana A Numismatic Study.
6. Gupta, P.L. : Coins.
7. Gopal, L. : Early Mediaeval Coin-Types of Northern India.
8. Bajpai, K.D. : Studies in Indian Numismatics.
9. Allan, J. : Catalogue of Coins of Ancient India.
10. Allan, J. : Catalogue of Coins of the Gupta Dynasty in the British Museum.
11. Whitehead, R.B. : Catalogue of Coin in the Punjab Museum, Lahore, Vol. I
12. Smith, V.A. : Catalogue of Coins in the Indian Museum, Calcutta, Vol. I
13. Altekar, A.S. : Catalogue of Gupta Coins in the Bayana Hoard.
14. Rapson, E.J. : Catalogue of Coins of Andhra Dynasty.
15. Pandey, D.B. : The History and the Coinage of the Yaudheyas.

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-IV (16/20AIH308) **Elements of Archaeological Studies**

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit: 4

Course Outcome:

CO1: The aim of the paper is to familiarize students with the basic knowledge of Archaeology as discipline, its scope and relation of it with social sciences &pure sciences.

CO2: The aim of the paper is also to familiarize students with an analytical approach toward Pre and Proto-historical cultures in Indian context.

CO3: Students will be able to understand the Early Harappan, Harappan and the Post-Harappan Cultures of India

CO4: Students will be able to understand the Iron Age, Painted Grey Ware, Megalithic Cultures and Northern Black Polished Ware Culture

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Aims and Scope of Archaeology. Its relationship with other sciences. Growth of Archaeology as scientific discipline.

Unit - 2

2. Rise and Growth of the Lower, Middle and Upper Paleolithic and Mesolithic cultures of India.
3. Neolithic cultures- Northern, Eastern, Southern and Vindhyan

Unit - 3

4. Early Harappan Cultures. Harappan Civilization and decline
5. General Survey of the Post-Harappan Cultures of India: OCP, Bara culture and Copper Hoard.

Unit - 4

6. The Iron Age, Painted Grey Ware, Megalithic Cultures and Northern Black Polished Ware Culture

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 308 .1	3	3	3	3	1	3	3	3	3	1
CO 308. 2	2	3	3	2	2	3	3	2	3	1
CO 308. 3	3	3	3	3	2	3	3	3	3	1

CO 308.4	2	3	3	1	1	3	3	1	3	1
AVG.	2.5	3	3	2.25	1.5	3	3	2.25	3	1

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 308.1	3	3	3	3	3
CO 308.2	3	3	3	3	3
CO 308.3	3	3	2	3	3
CO 308.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED

1. Wheeler, R.E.M. : Archaeology from the Earth (in Hindi& English)
2. Kenyon, K.M. : Beginning in Archaeology
3. Crawford, O.G.S. : Archaeology in the Field
4. Woolley, L. : Digging up the Past
5. Webster, Graham : Practical Archaeology
6. Atkinson, R.J.C. : Field Archaeology
7. Piggott, S. : Approach to Archaeology
8. Clark, J.G.D. : Archaeology and Society
9. Childe, V.G. : Piecing together the Past
10. Plenderleith, H.J. : The Preservation of Antiquities
11. Gairola, T.R. : Hand-Book of Chemical Conservation of Museum Objects.
12. Zeuner, F.E. : Dating in Past.
13. Agarwal, D.P. & Kusumgar : Pre-historic Chronology and Radio carbon dating in India
14. Srivastave, K.M. : New Era of Indian Archaeology.
15. Allehin, F.R. & B. : The Rise of Civilization in India and Pakistan.
16. Agrawal, D.P. : Archaeology in India.
17. Verma, R.K. : Bharatiya Pragitihasa (in Hindi)

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-V (16/20AIH305) Elements of Ancient Indian Art: -Same as in Group A

(GROUP-C)

Paper-I (16/20AIH301) **Historiography**
(Compulsory Paper same as in Group-A)
OR
Dissertation
(Compulsory same as in Group-A)

Paper-II (16/20AIH309) **History of Ancient Indian Art**

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit: 4

Course Outcomes

CO1: Critically evaluate the development of human society and various cultures from Stone Age to Iron Age, worldwide phenomenon. The discuss major cultural structures, events and then shaping the world context.

CO2: Evaluate and analyze different sources (Particularly archaeological) in overseas. The emphasis will be on the characteristics of The Art of the Indus Valley civilization And The Mauryan Court and folk art.

CO3: The emphasis will be on the characteristics of the form and contents of the Sunga Art; the Mathura School of Art; the Gandhara Art; the Origin of the Buddha Image; Art of Amaravati.

CO4: The emphasis will be on the characteristics of early medieval Indian arts and Paintings of Ajanta and Bagh.

Note: -At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. The concept of Indian Art, Ancient Indian Artists and Patrons.
2. Pre-historic painting.
3. Origin of the image worship.

Unit - 2

4 The Art of the Indus Valley civilization.

5 The Mauryan Court and folk art.

Unit - 3

6 The form and contents of the Sunga Art.

7 The Mathura School of Art, The Gandhara Art, The Origin of the Buddha Image, Art of Amaravati.

Unit - 4

8 Early medieval art with special reference to the Chandellas, the Palas, the Chalukyas, the Cholas and the Pallavas.

9 The classical art of the Gupta Age, contribution of the Mathura and the Sarnath Schools.

10 Paintings of Ajanta and Bagh.

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 309 .1	3	3	3	3	1	3	2	3	3	3
CO 309. 2	3	3	3	3	2	3	3	3	3	3
CO 309. 3	3	3	3	2	2	3	2	3	3	3
CO 309.4	3	3	3	2	1	3	1	3	3	3
AVG.	3	3	3	2.5	1.5	3	2	3	3	3

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 309.1	3	3	3	3	3
CO 309.2	3	3	3	3	3
CO 309.3	3	3	2	3	3
CO 309.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED

1. Agarwal, V.S. : Indian Art. (in Hindi)
2. Agarwal, V.S. : Gupta Art.
3. Ray, N.R. : An Approach to Indian Art.
4. Ray, N.R. : Bhartia Kala Ka Adhyana (In Hindi)
5. Ray, N.R. : Mauryan and Post-Mauryan Art (English & Hindi)
6. Mishra, R.N. : Ancient Artist and Art Activity.
7. Mishra, R.N. : Bharitiya Murtikala (in Hindi)
8. Mishra, R.N. : Bharahut (in Hindi)
9. Ghosh, A. (Ed.) : The Ajanta Murals.
10. Gupt, Jagdish : Pragatihasic Chitrkala (In Hindi)
11. Saraswati, S.K. : A Survey of Indian Sculpture.
12. Harle, J.C. : Gupta sculptures.
13. Williams, J. : The Art of Gupta India-Empire and Province.
14. Asher, F.M. : Pala Art.
15. Khare, M.D. : Bagh ki Guphayen (in Hindi)
16. Joshi, N.P. : Mathura Art.
17. Joshi, N.P. : Mathura Kala.
18. Rosenfield, J. : Dynastic Arts of the Kushanas.

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-III (16/20AIH310) **Ancient Indian Architecture**

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit : 4

Course Outcomes

CO1: Critically evaluate the development of human society and various.
CO2: Critically discuss major cultural structures.
CO3: Evaluate and analyze the Origin and development of the temple architecture.

CO4: Critically evaluate Temple Architecture of the Gupta and Early Medieval India.

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY
Unit - 1

1. Pre-historic House plan: Pit-dwelling, Wattle & Daub.
2. Harappan Architecture: Town-planning, Public building and Domestic architecture.

Unit - 2

3. Mauryan Architecture: Palace, City of Patliputra,
4. Origin and development of the Stupa.
5. The Stupas of Sanchi, Bharhut, Taxila, Amaravati and Mirpur Khas.

Unit - 3

6. Evolution of Chaitya caves and Viharas.
7. Origin and development of the temple architecture

Unit - 4

8. Evolution of the Gupta temples architecture.
9. Temple Architecture in Early Medieval India: Nagara Style (Orissa and Khajuraho), Vesara Style (Chalukyas and Hoyasalas), Dravida Style (Pallavas and Cholas).

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 310 .1	3	3	3	3	1	3	2	3	3	3
CO 310. 2	3	3	3	3	2	3	3	3	3	3
CO 310. 3	3	3	3	2	2	3	2	3	3	3

CO 310.4	3	3	3	2	1	3	1	3	3	3
AVG.	3	3	3	2.5	1.5	3	2	3	3	3

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 310.1	3	3	3	3	3
CO 310.2	3	3	3	3	3
CO 310.3	3	3	2	3	3
CO 310.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOK RECOMMENDED

1. Agarwal, V.S. : Indian Art. (in Hindi)
2. Ray, N.R. : Bhartia Kala Ka Adhyana (In Hindi)
3. Ray, N.R. : Mauryan and Post-Mauryan Art (English & Hindi)
4. Mishra, R.N. : Ancient Artist and Art Activity.
5. Mishra, R.N. : Bharahut (in Hindi)
6. Rowland, B. : The Art and Architecture of India.
7. Khare, M.D. : Bagh ki Guphayen (in Hindi)
8. Brown, P. : Indian Architecture, Vol. I.
9. Upadhayaya, V. : Prachina Bharatiya Stupa,Guha aura Mandira (in Hindi).
10. Kumaraswami, A . : Early Chola Architecture and sculpture.
11. Dehejia, V. : Early Buddhist Rock Temples.
12. Shastri, Ajay Mitra : Ajanta.
13. Agrawal, K.L. : Khajuraho.

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-IV (16/20AIH308) Elements of Archaeological Studies: -Same as in Group B

Paper-V (16/20AIH304) Elements of Ancient Indian Epigraphy: -Same as in Group A

Open Elective Paper (16/20AIH311) Historiography, Concept, Method & Tools

Marks: 40
Internal Assessment: 10
Time: 3 Hours
Credit : 2

Course Outcome:

CO1: Students will have developed their ability to assess critically historical analysis and argument, past and present.

CO2: Students will have gained an understanding of Problems of periodization ; Inter-disciplinary approach in history and Archaeological sources of Ancient India.

CO3: Students will be able to understand the Objectivity and causation; Exploration and Excavation Method of Archaeology.

CO4: Students will be able to understand the Dating Method in Archaeology.

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. The Meaning, Nature and Scope of Ancient History
2. Geographical factors in history.

Unit - 2

3. Problems of periodization
4. Inter-disciplinary approach in history
5. Archaeological sources of Ancient India: Prehistoric and Proto- historic sources, inscriptions, coins, art and architecture.

Unit - 3

6. Objectivity and causation
7. Exploration Method of Archaeology.
8. Excavation Method of Archaeology

Unit - 4

9. History of Indian Archaeology.
10. Dating Method in Archaeology.

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 311 .1	3	3	3	3	1	3	2	3	3	3
CO 311. 2	3	3	3	3	2	3	3	3	3	3
CO 311. 3	3	3	3	2	2	3	2	3	3	3
CO 311.4	3	3	3	2	1	3	1	3	3	3
AVG.	3	3	3	2.5	1.5	3	2	3	3	3

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 311.1	3	3	3	3	3
CO 311.2	3	3	3	3	3
CO 311.3	3	3	2	3	3
CO 311.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOK RECOMMENDED

1. Pandey, R.B. : Indian Palaeography.
2. Dani, A.H. : Indian Palaeography.
3. Sharma, T.R. : The Concept of History
4. Panchal, H.C. : *Itihas ka Arth evam Paddhti* (In Hindi)
5. Butterfield, H. : The Purpose and Method of History
6. Panikkar, K.M. : Geographical Factors in Indian History
7. Carr, E.H. : What is History, Penguin, 1985
8. Reiner, G.J. : History its Purpose and Method
9. Thapar, Romila : Interpreting History
10. Thapar, Romila : The Past & Prejudice
11. SheikhAli, B. : History: Its Theory and Methods
12. Subbarao, B. : The Personality of India

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

M.A. (4thSEMESTER)
(GROUP-A)

Paper-I (16/20AIH401) Historiography, Concept, Methods & Tools of Ancient History

(Compulsory Paper for each Group)

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit : 4

Course Outcome:

CO1: Students will have developed their ability to assess critically historical analysis and argument, past and present.

CO2: Students also know the Problems of Periodization; Sources of Ancient India and the Importance of the Objectivity in the history.

CO3: Students will have gained an awareness of recent and contemporary debates in the theory, practice of historical writing and gained debate in history thinker. Students will have gained insight into how historical arguments have been and are made become aware of Historiographical traditions outside the west.

CO4: Students will have had the opportunity to think reflexively about the nature of the historical enterprise within society. Students able to understand Debates in history

Note: -At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Nature and Scope and of Ancient History
2. Geographical factors in history

Unit - 2

3. Problems of Periodization
4. Sources of Ancient India
5. Importance of the Objectivity in the history

Unit - 3

6. Inter-disciplinary approach in history
7. Problems of Regional and national history writing
8. Collection and Selection of Data.

Unit - 4

9. Debates in History: Uses and Abuses in History, Re-writing of History
10. Causation in history

Pedagogy of the course work: *The students are taught with the help of slides. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 401 .1	3	3	3	2	2	3	3	2	3	--
CO 401. 2	3	3	3	2	2	3	3	3	3	--
CO 401. 3	3	3	3	2	2	3	3	3	3	3
CO 401.4	3	3	3	2	1	3	3	3	3	--
AVG.	3	3	3	2	1.7	3	3	2.7	3	0.7

C0,s and PO MAPPING MATRIX

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 401.1	3	3	3	3	3
CO 401.2	3	3	3	3	3
CO 401.3	3	3	2	3	3
CO 401.4	3	3	2	3	3
AVG.	3	3	2.5	3	3

BOOK RECOMMENDED

1. Pandey, R.B. : Indian Palaeography.
2. Dani, A.H. : Indian Palaeography.
3. Sharma, T.R. : The Concept of History
4. Panchal, H.C. : *Itihas ka Arth evam Paddhti* (In Hindi)
5. Butterfield, H. : The Purpose and Method of History
6. Panikkar, K.M. : Geographical Factors in Indian History
7. Carr, E.H. : What is History, Penguin, 1985
8. Reiner, G.J. : History its Purpose and Method
9. Thapar, Romila : Interpreting History
10. Thapar, Romila : The Past & Prejudice
11. SheikhAli, B. : History: Its Theory and Methods
12. Subbarao, B. : The Personality of India

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-II (16/20AIH402) Principles & Methods of Archaeology

Theory Marks: 60
Practical/Internship: 40
Time: 3 Hours
Credit: 4

Course Outcomes

CO1: The aims of the paper is to familiarize students with a range of analytical approaches and their application in reconstructions, interpretation and explanations of the Indian past with case studies and examples drawn from a wide range of temporal periods.

CO2: The broad objective of the course is to do three things: to inform the students about the major excavations of India, to familiarize them to the theoretical basis of field methods and to impart field training.

CO3: Students understanding the Recording the context of excavated remains; Methods of dating; Conservation and preservation of archaeological remains.

CO4: Students understanding the scientific analysis of excavated remains and Reconstruction of the socio-economic aspects, including contextual and site catchment analysis.

Note: -At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Rise of archaeology as a science.
2. Developments in field techniques: Methods & Techniques of Excavation.

Unit - 2

3. Marine Archaeology: with special reference to development in India.
4. Stratigraphy: Principles of stratification, Identification and recording of strata.
5. Determining the chronology and periods of excavated remains.

Unit - 3

6. Recording the context of excavated remains: preparation of sections and plans, three dimensional recording.
7. Methods of absolute dating: calendar and historical chronologies, clay verves, tree-rings, radioactive clocks, radiocarbon, thermo-luminescence, potassium argon and uranium series.
8. Conservation and preservation of archaeological remains, chemical treatment of organic and inorganic objects.

Unit - 4

9. Scientific analysis of excavated remains: (A) Study of pottery, tools, beads etc., (B) Study of organic remains - Botanical, Zoological and Human Bones.
10. Reconstruction of the socio-economic aspects, including contextual and site catchment analysis.

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

PRACTICAL: ARCHAEOLOGICAL EXCAVATION/EXPLORATION

The distribution of marks for practical shall be as follow	40 Marks
(A) Field Note Book.	20 Marks
(B) Oral and Practical Tests.	20 Marks

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 402 .1	3	3	2	2	2	3	3	2	3	1
CO 402. 2	3	3	2	2	2	3	3	2	3	3
CO 402. 3	3	3	2	2	2	3	3	2	3	1
CO 402.4	3	3	2	2	2	3	3	2	3	1
AVG.	3	3	2	2	2	3	3	2	3	1.5

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 402.1	3	3	3	3	3
CO 402.2	3	3	3	3	3
CO 402.3	3	3	2	3	3
CO 402.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED

1. Mishra, B. : Researches in Archaeology and Conservation.
2. Wheeler, R.E.M. : Archaeology from the Earth.
3. Plender Leith, H.J : The Preservation Antiquities.
4. Agarwal, D.P. : Indian Archaeology.
5. Srivastva, K.M. : New Era of Indian Archaeology.
6. Pandey,J.N. : Puratattva Vimarsha (In Hindi).
7. Agarwal, D.P. : Preservation of Art Objects and Library Materials.
8. Rao, S.R. : Marine Archaeology of Indian Ocean countries -
9. Rao, S.R. : Journal of Indian Ocean Archaeology. Vol-1,2&3

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-III (16/20AIH403) **Study of Ancient Pottery**

Theory Marks: 60
Practical/Internship: 40
Time: 3 Hours
Credit: 4

Course Outcome:

CO1: Students understand the Characteristics and Chronology of Pottery-Tradition of Archaeological Cultures in different phases of Ancient India.

CO2: Students understand the Classification of Pottery, Pottery-drawing and Interpretation.

CO3: Students study the Pottery tradition in Early Harappan and Harappan phase. Students study the various excavated historical sites.

CO4: Students understand the Distribution of OCP, PGW and NBPW in Northern India. They also understand historical and early medieval pottery.

Note: -At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Importance of Pottery in Archaeology, Origin and Development
2. Technological aspects of Pottery Making industry in Ancient India

Unit - 2

3. Classification of Pottery: Period wise, Pottery-drawing and Interpretation
4. Hakra ware tradition

Unit - 3

5. Pottery tradition in Early Harappan phase
6. Study of Harappan Pottery : Classical and Late Harappan

Unit - 4

7. Distribution of OCP, PGW and NBPW in Northern India
8. Early historical & historical pottery
9. Early Medieval Pottery tradition

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

PRACTICAL: Archaeological Excavation/Exploration

The distribution of marks for practical shall be as follow	40 Marks
(A) Field Note Book.	20 Marks
(B) Oral and Practical Tests.	20 Marks

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 403 .1	3	3	3	2	2	3	3	3	2	1
CO 403. 2	3	3	3	2	2	3	3	3	2	1
CO 403. 3	2	3	3	2	2	3	3	3	2	1
CO 403.4	2	3	3	2	1	3	3	3	1	1
AVG.	2.5	3	3	2	1.7	3	3	3	1.7	1

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 403.1	3	3	3	3	3
CO 403.2	3	3	3	3	3
CO 403.3	3	3	2	3	3
CO 403.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED

1. Manchanda, O. : A Study of the Harappan Pottery
2. Starr, R.F.S. : Indus Valley Painted Pottery
3. Govindchandra : Prachin Bhartiya Mitti ke Bartan (in Hindi)
4. Sankalia, H.D. : The copper and stone age potery of maheshwar-navadatoli
5. Cardi,B.D. : A new prehistoric ware from Baluchistan
6. Childe, V.D. : On The Causes of Grey and Black Coloration in Prehistoric Pottery
7. Cardi,B.D. : New wares and fresh problems fron Baluchistan
8. Raikes, R.L. : New Prehistoric Bi-chrome Ware from the Plains of Baluchistan
9. Rao, S.R. : Ceramics of the Indus-valley in Gujarat
10. Satyawadi, Sudha : Proto-historic Pottery of Indus Civilization, study of painted Motifs

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-IV (16/20AIH404) **Elements of Ancient Indian Numismatics**

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit: 4

Course Outcome:

CO1: Critically analyze the coins as a source of Indian History and Numismatic studies in India. Students will be able to understand the origin, evolution and antiquity of coin in India.

CO2: Students will be able to understand evolution of the Punch Marked and Indo-Greek coins.

CO3: Students will obtain the interpretation of the numismatic iconography.

CO4: Students will obtain the interpretation of their religious and cultural significance of coins.

Note: -At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Numismatics: Importance as source of history.
2. Origin and Early History of coinage in India.

Unit - 2

3. Evolution of the Punch Marked coins.
4. Salient features of Indo-Greek coinage and their influence.

Unit - 3

5. Coinage of Janpadas : The Yaudheyas, Kunindas andAudumbars
6. Satavahana coins ; Salient features and regional distribution

Unit - 4

7. Kushanas Coins : The coins of Kanishka and the religious and cultural significance of Kushana coinage.
8. Coinage of the Guptas.
9. Early Medieval coins.

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 404 .1	3	3	3	3	1	3	3	3	3	1
CO 404. 2	2	3	3	2	2	3	3	2	3	1
CO 404. 3	3	3	3	3	2	3	3	3	3	1
CO 404.4	2	3	3	1	1	3	3	1	3	1
AVG.	2.5	3	3	2.25	1.5	3	3	2.25	3	1

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 404.1	3	3	3	3	3
CO 404.2	3	3	3	3	3
CO 404.3	3	3	2	3	3
CO 404.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOK RECOMMENDED

1. Altekar, A.S. : Coinage of the Gupta Empire.
2. Lahiri, A.N. : Corpus of Indo-Greek Coins.
3. Pandey, D.B. : The History and Coinage of the *Yaudheyas*.
4. Chattopdhayaya, B. : The Age of the *Kushanas*-A Numismatic Study.
5. Chakarvarty, S.K. : Ancient Indian Numismatics.
6. Gupta, P.L. : Coins
7. Mehta,V.D.M. : Indo-Greek coins
8. Mitchiner, Michal : The Origin of Indian coins
9. Gardner, P. : The coins of the Greek and Scythians kings of Bactria
10. Datta, M. : A Study of the Satvahana coinage
11. Dasgupta,K.K. : Tribal History of Ancient India : A Numismatic Approach
12. Altekar, A.S. : Gupta Kalina Mudrayen(In Hindi)
13. Chattopadhyay, B. : The Age of the Kushanas: A Numismatic Study
14. Gopal, L. : Early Medieval coins types of Northern India
15. Banerji, R.D. : Prachina Mudra (In Hindi)

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-V (16/20AIH405) **Elements of Ancient Indian Architecture**

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit: 4

Course Outcomes

CO1: Critically evaluate the development of human society and various cultures from stone age.
CO2: Critically discuss major cultural structures.
CO3: Students understand the Evolution of Chaitya, Viharas and Rock-cut architecture.
CO4: Students understand the Origin and development of the temple architecture earliest to early medieval period.

Note: -At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. The proto-historic architecture of the Indus valley.
2. The Mauryan Architecture.

Unit - 2

3. Origin and development of the Stupa.
4. The Stupas at Sanchi Bharhut Taxila, Amaravati and Mirpur Khas.

Unit - 3

5. Evolution of Chaitya caves and Viharas.
6. Rock-cut architecture-Ajanta, Ellora and Elephanta's.

Unit - 4

7. Origin and development of the temple architecture
8. Evolution of the Gupta temples.
9. Temple Architecture in Early Medieval India.

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 405 .1	3	3	3	3	1	3	2	3	3	3
CO 405. 2	3	3	3	3	2	3	3	3	3	3
CO 405. 3	3	3	3	2	2	3	2	3	3	3
CO 405.4	3	3	3	2	1	3	1	3	3	3
AVG.	3	3	3	2.5	1.5	3	2	3	3	3

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 405.1	3	3	3	3	3
CO 405.2	3	3	3	3	3
CO 405.3	3	3	2	3	3
CO 405.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOK RECOMMENDED

1. Brown, P. : Indian Architecture, Vol. I.
2. Rowland, B.K. : Art and Architecture of India.
3. Saraswati, S.K. : A Survey of Indian Sculpture.
4. Agrawala, V.S. : Indian Art.
5. Agrawala, V.S. : Bharatiya Kala (in Hindi)
6. Agrawala, V.S. : Gupta Art.
7. Ray, N.R. : Mauryan and Post Muryan art (in English and Hindi).
8. Mishra, R.N. : Bharatiya Murti Kala (in Hindi)
9. Majumdar, R.C. & Dasgupta, K.K. (Ed.) : Comprehensive History of India,Vol. III. (Relevant Chapters).
10. Agrawala, P.K. : Gupta Temples.
11. Sastri, K.A.N. (Ed.) : Comprehensive History of India, Vol.II

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

(GROUP – B)

Paper-I (16/20AIH401) Historiography, Concept , Methods & Tools of Ancient History (Compulsory Paper same as in Group-A)

Paper-II (16/20AIH406) Study of Ancient Inscription

Theory Marks: 60
Practical/Internship: 40
Time: 3 Hours
Credit: 4

Course Outcome:

CO1: Critically analyze the Inscriptions as a source of Indian History with Classification of documents.

CO2: Students will be able to understand the origin and antiquity of art of writing in India as well as origin of Brahmi Script and Kharoshthi Script. They also understand the Ancient Indo-Iranian (Achaemenid) inscriptions.

CO3: Critically analyze the various aspects of inscriptions and their importance as a source of Indian History.

CO4: Students understand the decipherment and transliteration of Brahmi and Kharoshthi script. They also understand the original script of inscriptions.

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Classification of Inscriptions, general features of copper plate charters, and stone inscription.

Unit - 2

2. Ancient Indo-Iranian (Achaemenid) inscriptions :
   - (i) Presepolis inscription of Darius I,
   - (ii) Naqsh-I Rustam Inscriciption
   - (iii) Persepolis Inscription of xerexs.

Unit - 3

3. A cultural and Historical study of the following Inscriptions:
   - (i) Ashokan R.E.II (Girnar).
   - (ii) Rummindei Pillar Inscription of Ashoka
   - (iii) Pillar Edict VII of Ashoka
   - (iv) Shinkot Relic Casket Inscription of the time of Menander
   - (v) Ara Inscription of the time of Kanishka
   - (vi) Mathura Inscription of the time of Huvishka
   - (vii) Nasik Inscription of Vasisthiputra Pulmavi (Regnal Year 19)
   - (viii) Poona Copper- Plate of Phabhavatigupta.
   - (ix) Haraha Inscription of Isanavarman.
   - (x) Gwalior Inscription of Mihirabhoja

Unit - 4

4. Transliteration in the original script of any of the following inscriptions (in part or in full) :

   (i) Rummindei Pillar Inscription of Asoka.
   (ii) Panguraria Edict of Ashoka
   (iii) Besnagar Garuda Pillar Inscription of Helioodorus.
   (iv) Mehrauli Iron Pillar Inscription of Chandra
   (v) Poona Plate of Prabhavati Gupta
   (vi) Mandasor Inscription of Yasodharman- Visnuvardhana
   (vii) Dubi Plates of Bhaskaravarman
   (viii) Aphased Inscription of Adityasena
   (ix) Gwalior Inscription of Minigabhoja
   (x) Deopara Inscription of Vijay sena

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

PRACTICAL: VISIT ANY MUSEUM/MONUMENT THROUGHOUT INDIA

The distribution of marks for practical shall be as follow	40 Marks
(A) Field Note Book.	20 Marks
(B) Oral and Practical Tests.	20 Marks

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 406 .1	3	3	3	2	2	3	3	2	3	--
CO 406. 2	3	3	3	2	2	3	3	3	3	--
CO 406. 3	3	3	3	2	2	3	3	3	3	3
CO 406.4	3	3	3	2	1	3	3	3	3	--
AVG.	3	3	3	2	1.7	3	3	2.7	3	0.7

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 406.1	3	3	3	3	3
CO 406.2	3	3	3	3	3
CO 406.3	3	3	2	3	3
CO 406.4	3	3	2	3	3
AVG.	3	3	2.5	3	3

<u>BOOKS RECOMMENDED</u>

1. Hultzsch (Ed.) : Corpus Inscription Indicarum Vol. I.
2. Konow, S. (Ed.) : Corpus Inscription Indicarum Vol. I.
3. Sircar, D.C. : Select Inscriptions, Vol. I.
4. Sircar, D.C. : Indian Epigraphy.
5. Pandey, R.B. : Asoka Ke Abhilikha (in Hindi)
6. Pandey, R.B. : Some Historical and Literary Inscriptions.

7.	Ram, Sadhu	:	Some Inscription of Asoka, Guptas,Mukharis and Others.
8.	Buhler, G.	:	Indian Paleography (Indian Studies: Past and Present).
9.	Dani, A.H.	:	Indian Paleography.
10.	Pandey, R.B.	:	Indian Paleography.
11.	Ojha, G.H.	:	Bharatiya Prachin Lipimala (In Hindi).
12.	Upadhayaya, V.	:	Bharatiya Abhilekhon Ka Adhyayana(in Hindi)
13.	Barua, B.M.	:	Asoka and His Inscriptions.
14.	Barua, B.M.	:	Inscriptions of Asoka.
15.	Chattopadhyaya, S.	:	Early History of North India (Second edition)
16.	Goyal, S.R.	:	Gupt Kalin Abhilekh(in Hindi)
17.	Rao, S.N.	:	Bhartiya puralipi and abhilekh(inHindi).
18.	Gupta, P.L.	:	Prachin bharat ke pramukh abhilekh (in Hindi).

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-III (16/20AIH407) Study of Ancient Coins

Theory Marks: 60
Practical/Internship: 40
Time: 3 Hours
Credit: 4

Course Outcome:

CO1: Critically analyze the coins as a source of Indian History and Numismatic studies in India.
CO2: Students will be able to understand the origin, evolution and antiquity of coin in India.
CO3: Students will obtain the interpretation of the numismatic iconography as an important source for historical and artistic studies. They also understand the Methods of preservation, Displaying and Cataloging of coins.
CO4: Students will learn how identify coins of several periods and understand the decipherment and transliteration of Ancient Indian Coins.

Note: -At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Numismatics as source of Ancient Indian History.

Unit - 2

2. General Features of Ancient Indian Coinage: Numismatic Terminology, Metrology
3. Technique of manufacturing coins; Weights and weight standards.

Unit - 3

4. Methods of preservation, Displaying and Cataloging of coins: Period wise

Unit - 4

5. A General Survey of the Coinage of Early Medieval period
6. Decipherment of Ancient Indian coins.

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

PRACTICAL: VISIT ANY COIN GALLERY OF A MUSEUM THROUGHOUT INDIA

The distribution of marks for practical shall be as follow	40 Marks
(A) Field Note Book.	20 Marks
(B) Oral and Practical Tests.	20 Marks

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 407 .1	3	3	2	2	2	3	3	2	3	1
CO 407. 2	3	3	2	2	2	3	3	2	3	3
CO 407. 3	3	3	2	2	2	3	3	2	3	1
CO 407.4	3	3	2	2	2	3	3	2	3	1
AVG.	3	3	2	2	2	3	3	2	3	1.5

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 407.1	3	3	3	3	3
CO 407.2	3	3	3	3	3
CO 407.3	3	3	2	3	3
CO 407.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED

1. Banerji, R.D. : Prachina Mudra (In Hindi)
2. Chakraborti, Swati : Socio-Religious and Cultural Study of Ancient Indian Coins
3. Chattopadhyay, B. : The Age of the Kushanas: A Numismatic Study
4. Dasgupta,K.K. : Tribal History of Ancient India : A Numismatic Approach
5. Altekar, A.S. : Gupta Kalina Mudrayen
6. Datta, M. : A Study of the Satvahana coinage
7. Gupta, P.L. : Coins
8. Mehta,V.D.M. : Indo-Greek coins
9. Mitchiner, Michal : The Origin of Indian coins
10. Mukherjee, B.N. & Lee, P.K.D : Technology of Indian coins
11. Sahni, B. : The Technique of casting coins in Ancient India
12. Sharma,I.K. : Coinage of the Satavahana Empire
13. Sharan, M.K. : Tribal coins: A Study
14. Thakur, Upendra : Mines and minting in India
15. Upadhyaya,V. : Prachin Bharatiya Sikke (In Hindi)
16. Pandey, D.B. : The History and the Coinage of the Yaudheyas.

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-IV (16/20AIH-408) Elements of Field Archaeology

Marks: 80
Internal Assessment: 20
Time: 3 Hours
Credit: 4

Course Outcomes

CO1: Students get basic knowledge of scope of Archaeology and relation of Archaeology with social sciences & pure sciences. They also understand the Techniques of Exploration

CO2: Students get knowledge about the technique of excavation.

CO3: Students understand the relative and absolute dating and Chemical treatment and preservation of Archaeological finds. They also understand the Importance of Pottery in Archaeology.

CO4: Students understand the Reconstruction of the socio-economic aspects, including contextual and site catchment analysis. They also understand how Computer is useful in Archaeology

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Rise of archaeology as a science.
2. Techniques of Exploration

Unit - 2

3. Techniques of Excavation.
4. Recording and classification of objects/findings

Unit - 3

5. Techniques & Methods of Preservation andconservation of cultural property
6. Importance of Pottery in Archaeology

Unit - 4

7. Reconstruction of the socio-economic aspects, including contextual and site catchment analysis.
8. Use of Computer in Archaeology

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 408 .1	3	3	3	2	2	3	3	3	2	1
CO 408. 2	3	3	3	2	2	3	3	3	2	1
CO 408. 3	2	3	3	2	2	3	3	3	2	1
CO 408.4	2	3	3	2	1	3	3	3	1	1
AVG.	2.5	3	3	2	1.7	3	3	3	1.7	1

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 408.1	3	3	3	3	3
CO 408.2	3	3	3	3	3
CO 408.3	3	3	2	3	3
CO 408.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOKS RECOMMENDED

1. Wheeler, R.E.M. : Archaeology from the Earth (in English &Hindi).
2. Kenyon, K.M. : Beginning in Archaeology.
3. Crawford, O.G.S. : Archaeology in the Field.
4. Woolley, L. : Digging up the Past.
5. Webster, Graham : Practical Archaeology.
6. Atkinson, R.J.C. : Field Archaeology.
7. Piggott, S. : Approach to Archaeology.
8. Clark, J.G.D. : Archaeology and Society.
9. Childe, V.G. : Piecing together the Past.
10. Plenderleith, H.J. : The Preservation of Antiquities.
11. Gairola, T.R. : Hand-Book of Chemical Conservation of Museum Objects.
12. Zeuner, F.E. : Dating in Past.
13. Agarwal, D.P. & Kusumgar : Pre-historic Chronology and Radio carbon dating in India
14. Srivastave, K.M. : New Era of Indian Archaeology.
15. Allehin, F.R. & B. : The Rise of Civilization in India and Pakistan.
16. Agrawal, D.P. : Archaeology in India.
17. Verma, R.K. : Bharatiya Pragitihasa (in Hindi)
18. Jainarayan Pandey : Purattava Vimarsh (in Hindi)

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-V (16/20AIH405) Elements of Ancient Indian Architecture: -Same as in Group A

(GROUP –C)

Paper-I (16/20AIH401) Historiography, Concept, Methods & Tools of Ancient History (Compulsory Paper same as in Group-A)

Paper-II (16/20AIH409) Iconographical Study of Ancient Indian Art

Theory Marks: 60
Practical/Internship: 40
Time: 3 Hours
Credit: 4

Course Outcomes

CO1: Critically evaluate the development of iconographical study.
CO2: Students understand the Hindu Iconography
CO3: Students understand the Buddhist and Jain Iconography
CO4: Students understand the Syncretic and Composite Images.

Note: -At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit 1

Introduction to Iconography:
a) Significance of iconographic studies, Art as source of history
b) Concept and symbolism of icons and image worship
c) Origin and Antiquity of image worship in India

Unit 2

Hindu Iconography:

(i) Origin and development of Vishnu, Shiva, Ganesha, Surya and Shakti Image.
(ii) Sakt Cult: Development of the Iconography of Goddesses: Saptamatrikas, Durga, Lakshmi, Saraswati, Mahishsuramardini and Chamunda

Unit 3

Buddhist Iconography: Origin and development of Buddhist image, Bodhisattvas, Female Buddhist deities

Jaina Iconography: Origin and development of Jain images, Tirthankaras and Jain Goddess

Unit 4

Miscellaneous iconographic forms:

a. Pastoral Deities
b. Goddesses of Fertitily
c. Vidyadharas, Gandharvas, Kinnaras
d. Syncretic and Composite Iconic Forms: Origin, development and significance

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

PRACTICAL: VISIT ANY MUSEUM/MONUMENT THROUGHOUT INDIA

The distribution of marks for practical shall be as follow 40 Marks
(A) Field Note Book. 20 Marks
(B) Oral and Practical Tests. 20 Marks

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 409 .1	3	3	3	3	1	3	3	3	3	1
CO 409. 2	2	3	3	2	2	3	3	2	3	1
CO 409. 3	3	3	3	3	2	3	3	3	3	1
CO 409.4	2	3	3	1	1	3	3	1	3	1
AVG.	2.5	3	3	2.25	1.5	3	3	2.25	3	1

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 409.1	3	3	3	3	3
CO 409.2	3	3	3	3	3
CO 409.3	3	3	2	3	3
CO 409.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOK RECOMMENDED

1. Agrawals, P.K. : Studies in Indian Iconography
2. Agrawala, Urmila : North Indian Temple Sculpture.
3. Bakkar, Hans : The Vakatakas an Essay in Hindu Iconology
4. Banerjee, J.N. : Development of Hindu Iconography.
5. Bhattacharya, A.K. : Historical Development of Jaina Iconography
6. Bhattacharya, B. : Indian BuddhistIconography.
7. Phattacharya, D. : Iconology of Composite Images
8. Bruhn, Klaus : Jina Images of Deogarh vol.I.
9. Chawla, J. : The Rigvedic Deities and their Iconic Froms.
10. Desai, Kalpana : Iconography of Vishnu. New Delhi: Abhinav Publication
11. Gopinath Rao, T.A. : Elements of Hindu Iconography.
12. Gupte, R.S. : Iconography of Hindu, Buddhists and Jains.
13. Krishanan, Y. : The Buddha image: Its origin and Development.
14. Lal, Shyam Kishor : Female Divinities in Hindu Mythology and Ritual.
15. Mishra, Ramnath : Yaksha Cult and Iconography.
16. Parimoo, Ratan : Life of Buddha in Indian Sculpture (Ashta-Maha-Pratiharyan): An Iconological Analysis
17. Vyas, R.T. : Studies in Jaina Art and Iconography and allied Subjects
18. Banerjee, J.N. : Development of Hindu Iconography.

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-III (16/20AIH410) **Study of Ancient Monuments**

Theory Marks: 60
Practical/Internship: 40
Time: 3 Hours
Credit: 4

Course Outcomes

CO:1 Students understand the Remains of the Mauryan monuments.
CO2: Students also understand the Mauryan Pillars, Caves and Stupas.
CO3: Students also understand the Rock-cut architecture and Early Temple remains.

CO4: Students will be able to understand the temples of north and south India.

Note: - At least ten questions shall be set in the paper spread over the entire four units, out of which the candidates shall be required to attempt any five .One question from each unit. All questions shall carry equal marks.

OUTLINES OF STUDY

Unit - 1

1. Remains of the Mauryan palace and city of Pataliputra.
2. A study of the monuments of Rajgir, Sarnath, Taxila, Nalanda and Nagarjunikonda

Unit - 2

3. Asokan Pillars and Mauryan caves at Barabar and Nagarjuni.
4. Buddhist caves at Bhaja, Karle and Kanheri; Jaina caves at Udaigiri and Khandagiri (Orissa)
5. The Stupas at Sanchi,Bharhut , Taxila, Amaravati.

Unit - 3

6. Rock-cut architecture-Ajanta, Ellora, Elephants and Bagh caves.
7. Early Temple remains-.Besnagar, Nagari and Sonkh.The Gupta Temples at Sanchi, Bhumra, Deogarh and Bhitargaon

Unit - 4

8. The Temples of Northern India- Martanda temple, Khajuraho, Bhuvanesvara, Konark and Abu.
9. The Temples of South India Mamallapuram, Aihole, Eilora, Bhuvaneshvar, Konark, Khajuraho and Tanjore.
10. Early Medieval temples; kailash temple (Ellora). Temple of Khajuraho, Bhubanesvara. Mamallapuram and Tanjore.

Pedagogy of the course work: *The students are taught with the help of slides, photographs, maps etc. In addition to lectures, workshops, seminars, field trips, case studies are arranged to enhance the articulation skill of the students.*

PRACTICAL: VISIT ANY MUSEUM/MONUMENT THROUGHOUT INDIA

The distribution of marks for practical shall be as follow	40 Marks
(A) Field Note Book.	20 Marks

(B) Oral and Practical Tests. 20 Marks

C0,s and PO MAPPING MATRIX

	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	PO7	PO8	PO9	PO10
CO 410 .1	3	3	3	3	1	3	2	3	3	3
CO 410. 2	3	3	3	3	2	3	3	3	3	3
CO 410. 3	3	3	3	2	2	3	2	3	3	3
CO 410.4	3	3	3	2	1	3	1	3	3	3
AVG.	3	3	3	2.5	1.5	3	2	3	3	3

C0,s and PSO MAPPING MATRIX

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5
CO 410.1	3	3	3	3	3
CO 410.2	3	3	3	3	3
CO 410.3	3	3	2	3	3
CO 410.4	3	3	3	3	3
AVG.	3	3	2.7	3	3

BOOK RECOMMENDED

1. Brown, Percy : Indian Architecture.
2. Agrawal, P.K. : Gupta Temples.
3. Agrawal, K.L. : Khajuraho.
4. Agarwal, V.S. : Indian Art (in Hindi & English)
5. Agarwal, V.S. : Gupta Art.
6. Boner, Sharma & Dass : New Light in the Sun Temple of Konark.
7. Dehejia, V. : Early Budhist Rock Temples.
8. Deva, Drishna : Temples of North India.
9. Ghosh, A. (Ed.) : The Ajanta Murals.
10. Khare, M.D. : Bagh ki Guphayen (in Hindi)
11. Ray, N.R. : Bhartia Kala Ka Adhyana (In Hindi)
12. Rowland, B. : The Art and Architecture of India.
13. Shastri, Ajay Mitra : Ajanta.
14. Soudararajan, S.V. : Indian Temples of South India.
15. Shrinivasan, K.R. : Temples of South India.

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology

Paper-IV (16/20AIH408) Elements of Field Archaeology: -Same as in Group B

Paper-V (16/20AIH404) Elements of Ancient Indian Numismatics: -Same as in Group A

Seventh Semester

B. Tech. (7th Semester) Mechanical Engineering							
MEO-401	**SMART MATERIALS**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	The purpose of this course is to develop the understanding of various aspects of smart materials, smart structures and their applications.						
Course Outcomes							
CO1	Students will be able to recognize the key concepts behind classification and fabrication of smart materials and various functions of intelligent materials.						
CO2	Students will be able to categorize the various types of smart structure systems, actuators and sensors.						
CO3	Students will be able to describe the various types of SMA based hybrid composites and smart battery materials.						
CO4	Students will be able to perceive the structure and properties of various types of nanotubes.						

UNIT-I

Smart materials: key concepts: Introduction to smart materials, definition of smart materials, define smart materials, basic principles behind smart properties, classification of smart materials according to their production technologies and applications in various industries, approaches to fabrication of smart materials, properties of smart materials, nanoscale and microscale structure property relationship, Intelligent materials, primitive functions of intelligent materials, intelligence inherent in materials, intelligent materials in harmony with humanity, intelligent biological materials, biomimetics.

UNIT-II

Smart materials and structural systems: Introduction, actuator materials, sensing technologies, sensing technologies, microsensors, intelligent systems, hybrid smart materials, passive sensory smart structures, reactive actuator based smart structures, active sensing and reactive smart structures, smart skins.

UNIT–III

Shape memory alloys: Phase transition, shape-memory effect, shape memory alloy fiber/metal matrix composites, shape memory alloy fiber/polymer matrix composites, SMA particulate / aluminum matrix composites.

Smart battery materials: Introduction, electrochemical concepts involved in a battery, types of batteries, lithium ion batteries, layered oxide cathodes, spinel oxide cathodes, olivine oxide cathodes, carbon anodes.

UNIT–IV

Nanoscale intelligent materials and structures: Introduction, nanotube geometric structures, structures of carbon nanotubes, structures of non-carbon nanotubes, designations of nanotubes and nanostructured materials, mechanical and physical properties of nanotubes; elastic properties, electrical conductivity, magnetoresistance, piezo-resistance, electrokinetics of nanotube, piezoelectric properties, electrochemical effects, nanotube power generation, nanotube contact phenomena.

Text books:

1. Smart Materials and Structures - M.V. Gandhi and B.S. Thompson, Chapman and Hall pub.
2. Encyclopedia of Smart Materials - Mel Shwartz Vol.1 and 2, John Wiley & Sons, Inc.
3. Nano engineering of Structural, Functional, and Smart Materials - Mark J. Schulz, Ajit D. Kelkar, and Mannur J. Sundaresan , Taylor and Francis Pub.

Reference books:

1. Micro and smart systems - Ananthasuresh, Wiley India Ltd.
2. Coursera course Smart Materials: Microscale and Macroscale Approaches - Peter the great St. Petersburg Polytechnic University.

Note: The paper setter will set the paper as per the question paper template provided.

B. Tech. (7th Semester) Mechanical Engineering							
MEO-405	**NON-DESTRUCTIVE TESTING**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	The purpose of this course is to make the students understand about different inspection and testing methods of components safely and without damage.						
Course Outcomes							
CO1	Students will be able to learn the fundamental concepts of NDT.						
CO2	Students will be able to describe the different methods of NDE.						
CO3	Students will be able to describe the concept of thermography and eddy current testing.						
CO4	Students will be able to explain the ultrasonic testing and acoustic emissions.						

UNIT-I

Introduction to NDT: NDT vs destructive testing, overview of the don-destructive, Testing methods for the detection of manufacturing defects as well as material characterization, relative merits and limitations, various physical characteristics of materials and their applications in NDT, visual inspection – unaided and aided

UNIT-II

Surface NDE methods: Liquid penetrant testing – principles, types and properties of liquid penetrants, developers, advantages and limitations of various methods, testing procedure, interpretation of results, magnetic particle testing-theory of magnetism, inspection materials magnetization methods, interpretation and evaluation of test indications, principles and methods of demagnetization, residual magnetism.

UNIT–III

Thermography and eddy current testing (ET): Thermography- principles, contact and non-contact inspection methods, techniques for applying liquid crystals, advantages and limitations – infrared radiation and infrared detectors, instrumentations and methods, applications, eddy current testing-generation of eddy currents, properties of eddy currents, eddy current sensing elements, probes, instrumentation, types of arrangement, applications, advantages, limitations, interpretation/evaluation

UNIT–IV

Ultrasonic testing (UT) and acoustic emission (AE): Ultrasonic testing-principle, Transducers, transmission and pulse-echo method, straight beam and angle beam, instrumentation, data representation, A/Scan, B-scan, C-scan, phased array ultrasound, time of flight diffraction, acoustic emission technique–principle, AE parameters, applications.

Text books:

1. Non-Destructive Testing - Baldev Raj, T. Jayakumar, M. Thavasimuthu Narosa Publishing House.
2. Non-Destructive Testing Techniques - Ravi Prakash, 1st revised edition, New Age International Publishers.

Reference books:

1. ASM Metals Handbook,Non-Destructive Evaluation and Quality Control, American Society of Metals, Metals Park, Ohio.
2. ASNT, American Society for Non Destructive Testing, Columbus, Ohio, NDT Handbook, Vol. 1, Leak Testing, Vol. 2, Liquid Penetrant Testing, Vol. 3, Infrared and Thermal Testing Vol. 4, Radiographic Testing, Vol. 5, Electromagnetic Testing, Vol. 6, Acoustic Emission Testing, Vol. 7, Ultrasonic Testing.
3. Handbook of Nondestructive evaluation by Charles, J. Hellier, McGraw Hill, New York 2001.
4. Introduction to Non-destructive testing: a training guide by Paul E Mix, Wiley, 2nd Edition New Jersey, 2005.

Note: The paper setter will set the paper as per the question paper template provided.

B. Tech. (7th Semester) Mechanical Engineering							
MEO-407	**MANUFACTURING COST ESTIMATION**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	The purpose of this course is to impart the students with the knowledge of cost estimating function and controls, organizing and staffing for cost estimation and cost estimation of machining, joining and finishing processes.						
Course Outcomes							
CO1	Students will be able to describe cost reduction techniques, cost estimating functions, and establish staff and organization for cost estimation.						
CO2	Students will be able to discuss cost estimating controls and various estimating procedures.						
CO3	Students will be able to estimate the costs for different machining and casting processes.						
CO4	Students will be able to estimate the costs for different joining and surface finishing processes.						

UNIT-I

The estimating function and costing studies: Explanation of terms, importance of the life of the product, target cost, product costs, purpose of estimating, types of estimates, a systematic approach to cost reduction, cost reduction examples, team efforts.

Organizing and staffing for estimating: Coordinated product cost estimating, cost estimating department, type of organization and cost estimating, qualifications of a cost estimator, development of a cost estimator.

UNIT-II

Cost estimating controls: Administrative controls, initiating cost requests, estimating methods, controlling the cost estimate, controlling estimate deviations, estimating in a changing cost environment, do's and don'ts of cost estimating.

Estimating procedures: Cost estimating analysis, part analysis, preliminary manufacturing plan, facilities, direct material cost, tooling costs, manufacturing time, direct labour costs, factory burden, total manufacturing cost.

UNIT–III

Cost estimation for machining: Traditional machining operations defined, gathering information, economical machining, cost modelling and calculations, grinding application, milling application, non-traditional machining applications.

Estimating casting costs: Casting materials, casting processes, determining material costs, foundry tooling defined, molding costs, core costs, machining and cleaning costs, heat treatment, inspection and shipping costs, foundry burden.

UNIT–IV

Estimation of cost: Joining Costs: Welding, Braze Welding, Brazing, Soldering, Electron Beam Welding, Laser Beam Welding, Plasma Arc Welding, Adhesive Bonding, Fastening, Ultrasonic Welding.

Estimating surface finishing costs: Deburring, ultrasonic cleaning, polishing, honing, hybrid finishing processes, painting, electroplating, cost modelling and calculations.

Text books:

1. Realistic cost estimating for manufacturing. Third Edition - Lembersky, Michael Society of Manufacturing Engineers, 2016.
2. Process Planning and Cost Estimation, Second Edition - R. Kesavan, C. Elanchezhian, B. Vijaya Ramanath, New age international publishers.

Reference books:

1. Process Planning And The Cost Estimation - M. Adithan, New age international publishers.
2. Estimating and Costing for the Metal Manufacturing Industries - Robert Creese (Author), M. Adithan (Author), CRC Press

Note: The paper setter will set the paper as per the question paper template provided.

B. Tech. (7th Semester) Mechanical Engineering							
MEO-409	**ERGONOMICS**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	0	0	3	75	25	100	3
Purpose	The purpose of this course is to make the students aware of the human factor engineering principles and its application to different disciplines.						
Course Outcomes							
CO1	Students will be able to explain the ergonomics fundamentals and anthropometry.						
CO 2	Students will be able to analyse the human posture, relative movements and human behavior and perception.						
CO 3	Students will be able to apply the ergonomics principles in visuals display and product designing.						
CO 4	Students will be able to describe the workstation design and occupational safety.						

UNIT-I

Discipline approach: ergonomics/ human factors: Introduction to ergonomics, Fitting task to man their contractual structure, domain, philosophy and objective, mutual task comfort: two way dialogue, communication model, ergonomics/ human factors fundamentals, physiology (work physiology) and stress.

Human physical dimension concern: Human body- structure and function, anthropometrics, Anthropometry: body growth and somatotypes, static and dynamic anthropometry, stand posture-erect, Anthropometry landmark: sitting postures, Anthropometry: squatting and cross-legged postures, anthropometric measuring techniques, statistical treatment of data and percentile calculations.

UNIT-II

Posture and movement: Human body- structure and function, posture and job relation, posture and body supportive devices, chair characteristics, vertical work surface, horizontal work surface, movement, work counter

Behaviour and perception: Communication and cognitive issues, psycho-social behaviour aspects, behaviour and stereotype, information processing and perception, cognitive aspects and mental workload, human error and risk perception

UNIT-III

Visual Issues: Visual performance, visual displays, environments factors, environmental factors influencing human performance

Ergonomic design process: Ergonomics design methodology, Ergonomics criteria/check while designing, Design process involving ergonomics check, some checklists for task easiness.

UNIT-IV

Performance support and design intervention: Occupational safety and stress at workplace in view to reduce the potential fatigue, errors, discomforts and unsafe acts workstation design, furniture support, vertical arm reach and design application possibility

Humanising design: Design and human compatibility, comfort and adaptability aspects, Design Ergonomics in India: scope for exploration.

Text Books:

1. Introduction to Ergonomics - R. Bridger-CRC Press, Taylor & Francis Group.
2. Human Factors in Engineering and Design-M. Sanders, E. McCormick, McGraw-Hill International Editions: Psychology Series.
3. An Introduction to Human Factors Engineering-C. Wicknes, S. Gordon, Y. Liu and S. Gordon-Becker, New York.
4. Indian Anthropometric Dimensions for Ergonomic Design Practice-D. Chakrabarti, National Institute of Design, Ahmedabad.

Reference Books:

1. Handbook of Human Factors and Ergonomics-G. Salvendy, John Wiley & Sons, Inc.
2. Ergonomics for Beginners, A Quick Reference Guide, J. Dul and B. Weerdmeester, CRC Press, Taylor & Francis Group.

Note: The paper setter will set the paper as per the question paper templates provided.

B. Tech. (7th Semester) Mechanical Engineering							
MEO-411	**AIR AND NOISE POLLUTION**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	0	0	3	75	25	100	3
Purpose	The objective of this course is to analyze the emissions from automobiles, industries and to describe various techniques of reducing these emissions. Also to understand the concept to control noise pollution.						
Course Outcomes							
CO1	Students will be able to analyze the emissions from industries and various vehicles.						
CO2	Students will be able to understand standards, alternative control strategies and AAQ guidelines.						
CO3	Students will be able to describe various processes for desulfurization, flue control methods for various exhaust gases.						
CO4	Students will be able to explain the characterization of noise, physical sound and various noise barriers.						

UNIT-I

Introduction: Concept of unpolluted air, gaseous and vapour pollutants in atmosphere, scales of air pollution, primary and secondary pollutants, ambient air quality, monitoring of pollutants (SO_2, NO_2, O_3, PAN, particulates, hydrocarbons, PAH's) and their health effects, stack monitoring for SO_x, NO_x, CO, CO_2, Hydrocarbons, Fluorides, Ammonia, VOCs, effects of air pollution on vegetation, materials and structures, stack monitoring for thermal power plant, oil refinery industry, fertilizer industry, non-ferrous metal industry. recent techniques of online stack monitoring, emission inventory, trends of AAQ in urban, rural and Industrial areas.

UNIT-II

Air quality: National and International air emission standards and AAQ guidelines, indoor air quality, averaging time, air pollution system, alternative control strategies, GLC estimates for multiple sources using standard software (e.g., EPA's ISC model), determination of effective stack height.

UNIT–III

Emission Standards and Particulate matter: Distribution and sources of particulate matter, Hood duct design, particulate collection mechanisms, control systems and their design, flue-gas desulfurization processes, flue gas control methods for NO_x, emission standards for automobiles, origin of exhaust emissions from gasoline, diesel, CNG and LPG engines, crankcase and evaporative emissions, emission reduction by fuel changes, emission reduction by engine design changes, catalytic converters, diesel engine emissions.

UNIT–IV

Noise: Characteristics, sources, types of noise, impact of noise.

Physics of sound- Speed of sound, sound pressure, frequency, wavelength, RMS sound pressure, sound pressure level, loudness, sound power level and sound energy density, sound propagation, wind and temperature gradient.

Enclosures and Barriers: Lead as a noise barrier, plenum barriers, barrier around pipe, wires and rectangular ductwork, high transmission loss ceilings, acoustical foams, nylon in noise reduction, damping compounds.

Noise measuring equipments: Sound level meter, octave band analyzer, statistical analyzer and noise average meter.

Text books:

1. Rao M.N. and Rao H.V.N., "Air Pollution", Tata McGraw Hill Publishing Company Ltd., New Delhi.
2. Wang L.K., Pereira N.C., Hung Y.T., "Advanced Air and noise pollution control", Volume I andII, Humana Press, New Jersey.

Reference books:

1. Ghassemi A., "Pollution Control and Waste Minimization", Marcel Dekker, Inc., New York.
2. Rao C.S., "Environmental Pollution Control Engineering", New Age International (P) Ltd., New Delhi.
3. Singal S.P., "Noise Pollution and Control Strategy", Alpha Science International, New Delhi.
4. Ray T.K., "Air Pollution Control in Industries", Volume I, Tbi, New Delhi.
5. Stern A.C., Bauble R.W., Fox D.L., Turner B., "Fundamentals of Air Pollution, Hardcover", Elsevier Science and Technology Books.
6. Narayanan P., "Environmental Pollution Principles, Analysis and Control", CBS Publishers

Note: The paper setter will set the paper as per the question paper template provided.

MEC-401	AUTOMATION IN MANUFACTURING						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	The purpose of this course is to impart knowledge of production automation, robotics, flexible manufacturing, CNC programming, material handling and automated storage systems.						
Course Outcomes							
CO1	Students will be able to explain the role automation in manufacturing and robotics in industry.						
CO2	Students will be able to describe the group technology and flexible manufacturing techniques in the automated production line and manufacturing system.						
CO3	Students will be able to explain computer aided process planning and shop floor manufacturing activities.						
CO4	Students will be able to develop CNC programs and understand the concept automated guided vehicle and automated storage system in material handling.						

UNIT-I

Introduction: Production system, automation in production system, manual labour in production system, automation principle and strategies, manufacturing industries and products, manufacturing operations, product facilities, product/ production relationship, basic elements of an automation system, advance automation function, level of automation.

Industrial robotics: Robot anatomy and related attributes, joint and links, common robot configuration, joint drive system, sensors in robotics, robot control system, end effectors, grippers and tools, applications of industrial robots, material handling, processing operation, assembly and inspection, robot programming.

UNIT-II

Group technology and cellular manufacturing: Part families, parts classifications and coding, production flow analysis, cellular Manufacturing- composite part concept, machine cell design, applications of group technology, grouping parts and machines by rank order clustering technique, arranging machines in a G.T. cell.

Flexible manufacturing: Introduction, FMS components, flexibility in manufacturing – machine, product, routing, operation, types of FMS, FMS layouts, FMS planning and control issues, deadlock in FMS, FMS benefits and applications.

UNIT- III

Process planning: Introduction, manual process planning, computer aided process planning – variant, generative, decision logic decision tables, decision trees, Introduction to artificial intelligence.

Shop floor control: Introduction, shop floor control features, major displays, major reports, phases of SFC, order release, order scheduling, order progress, manufacturing control, methodology, applications,

shop floor data collections, Types of data collection system, data input techniques, automatic data, collection system.

UNIT- IV

CNC basics and part programming: Introduction, historical, background, basic components of an NC, steps in NC, verifications of numerical control machine tool programs, classification of NC Machine tool, basics of motion control and feedback for NC M/C, NC part programming, part programming methods, modern machining system, automatically programmed tools, DNC, adaptive control.

Automated guided vehicle and storage system: Functions of AGV, types of AGV, safety consideration for AGV, design of AGV; Introduction to storage system, storage system performance, storage location strategies, conventional storage method and equipment, automated storage system, fixed aisle automated storage/ retrieval system, carousel storage systems, analysis of storage system, fixed aisle automated storage/ retrieval systems, carousel storage systems.

Text Books:

1. CAD/CAM/CIM-P. Radhakrishnan, S. Subramanayan and V.Raju, New Age International (P) Ltd., New Delhi.
2. Computer Integrated Manufacturing- Alavudeen and Venkateshwaran, Prentice- Hall of India Pvt. Ltd., New Delhi.

Reference Books:

1. Automation, Production System and Computer Integrated Manufacturing- Mikell P. Groover, Pearson fourth edition.
2. CAD/CAM: Computer Aided Design and Manufacturing-Groover-M.P. and Zimmers E. W.,Prentice Hall International, New Delhi, 1992.

Note: The paper setter will set the paper as per the question paper template provided.

B. Tech. (7th Semester) Mechanical Engineering								
MEC-403L	**MECHANICAL ENGINEERING LAB-III**							
Lecture	**Tutorial**	**Practical**	**Credits**	**Major Test**	**Minor Test**	**Practical**	**Total Time**	**Time (Hrs.)**
0	**0**	**2**	**1**	**0**	**40**	**60**	**100**	**3**
Purpose:	To provide practical knowledge in the concerned subject that a student opt from the program electives offered in the curriculum.							

COMPUTER AIDED DESIGN PRACTICALS

Course Outcomes

CO1 Students will be able to draw and design 2D models.

CO 2 Students will be able to draw and design 3D modelling.

CO 3 Students will be able to assemble the parts.

List of experiments:

1 To study the 2 dimensional drawing, orthographic views, front view, top view and side view.
2 Introduction to Solid Works and working with sketch mode.
3 To study the wireframe, surface and solid modelling.
4 Working with the tools like Pattern, Copy, Rotate, Move and Mirror etc.
5 Working with creating 3D features (Extrude & Revolve).
6 Working with the tools like Hole, Round, and Chamfer etc.
7 Create the part drawing of product 1 using any 3D software.
8 Draw the part drawing of product 2 using any 3D software.
9 Draw the part drawing of product 3 using any 3D software.
10 Make assembly by using any 3D software.

Note: Product 1, 2 and 3 must be based on MEP-401.

FINITE ELEMENT ANALYSIS LAB:

Course Outcomes

CO1 Students will be able to apply the basic theory of elasticity to continuum problems

CO2 Students will be able to formulate Finite Element problems like bar, truss and beam elements for linear static structural analysis

CO3 Students will be able to formulate 2D and axisymmetric finite elements

CO4 Students will be able to formulate and solve finite element equations for 1D heat transfer elements

List of Experiments:

1. To solve problems related to solid mechanics, heat transfer and free vibration by using NASTRAN/SIMULIA/ANSYS/ABAQUS.
2. Introduction of GUI of the software in the above mentioned areas realistic problems.
3. To analyze beams and frames (bending and torsion problems).

4. To analyze plane stress and plane strain problems.
5. Problems leading to analysis of axisymmetric solids.
6. Problems leading to analysis of three dimensional solids: (a) Heat Transfer problems (b) Modal analysis problem:

By writing own code for finite element analysis using MATLAB for:

7. Plane stress and Plane strain problems.
8. Modal analysis problems.

Reference Books:

1. Finite Element Method using MATLAB-Young W Kwon and Hyochoong Bang, CRC Press Washington, USA.
2. Finite Element Method: A Practical Course-G. R. LIU and S. S. Quek, Elsevier Science, Butterworth – Heinemann publication.

POWER PLANT ENGINEERING LAB:

Course Outcomes

CO1 Students will be able to explain the constructional features and working of different boilers, accessories, mountings, heat balance sheet preparation and to analyze the quality of steam.

CO2 Students will be able to describe the functions of different cooling towers and condensers and calculate their efficiencies.

CO3 Student will be able to calculate the calorific value of fuels using a bomb calorimeter.

CO4 Student will be able to explain the functioning and use of solar photovoltaic systems and calculate the efficiency of a solar cell.

List of Experiments:

1. To study high pressure boilers.
2. To study low pressure boilers.
2. To study about the mountings & accessories of high and low-pressure boilers.
3. To prepare the heat balance sheet for the given boiler.
5. To find the calorific value of a given sample of solid/liquid fuel(s) using a bomb calorimeter.
6. To find power output and efficiency of impulse and reaction steam turbine.
7. To study cooling tower and calculate its efficiency.
8. To study various types of condenser and calculate efficiency.
9. To find the dryness fraction of steam using separating and throttling calorimeters.
10. To study solar photovoltaic systems and calculation of efficiency of a solar cell.

MECHATRONIC SYSTEMS PRACTICALS

Course Outcomes

CO1 Students will be able to control the speed of DC motor and servo motor using 8051 microcontrollers.

CO2 Students will be able to control the motion of single and double acting cylinder using Pneumatic and Hydraulic training kit.

CO3 Students will be able to control traffic light signals using PLC and 8051 microcontrollers.

CO4 Students will be able to perform operations of addition, subtraction, multiplication and division using 8086 Microprocessor.

List of Experiments

1 To run a stepper motor at different speeds and directions using 8051 assembly language.

2 To control traffic light by interfacing with PLC kit.

3 To perform speed control of DC motor with 8051 microcontroller.

4 To perform experiment on hydraulic trainer kit.

5 To perform experiment on pneumatic trainer kit.

6 To study various types of sensors and transducers.

7 To control a traffic light system using 8051 Microcontroller

8 To perform the 8-bit addition and subtraction using 8086 Microprocessor.

9 To perform the 8-bit multiplication and division using 8086 Microprocessor.

INDUSTRIAL ROBOTICS PRACTICALS

Course Outcomes

CO 1 Students will be able to analyze the movement of various positions of robotics arm.
CO 2 Students will be able to design the robotics systems.
CO 3 Students will be able to analyze the pneumatic and hydraulic systems.
CO 4 Students will be able to demonstrate sensors, grippers etc.

List of Experiments

1. Recoding Robot positions (Absolute positions, Delete Positions, Save and load positions and Move the Robot to recorded positions).
2. Demonstration of Cartesian/ cylindrical/ spherical robot.
3. Study of different types of grippers.
4. Study of sensor integration.
5. Study of robotic system design.
6. Setting robot for any one industrial application after industrial visit.
7. Study the major equipment/Software/Components in Robotics Lab, e.g. Robotic Arm components, Arena etc.
8. Study of pneumatic and hydraulic system in Robotics.

SOLAR ENERGY ANALYSIS PRACTICALS

Course Outcomes

CO 1 Students will be able to analyze the solar based heating concepts and flow of working fluid in collector.
CO 2 Students will be able to analyze the solar parabolic trough and evacuated tube collector.
CO 3 Students will be able to know about the solar energy storage by different means and understand the sun-earth relationships for sun tracking.
CO 4 Students will able to describe the functioning of solar PV collector power plant.

List of Experiments:

1. To evaluate the system efficiency and heat transfer of evacuated tube collector in different parts of system at different ambient conditions.
2. Evaluation of system thermal efficiency solar collector during charging storing and discharging the PCM.
3. To determine the thermal Performance of the Parabolic Trough collector with different inlet temperature of water and oil.
4. To evaluate the thermal performance of flat plate collector in thermosiphon and forced mode of flow at different radiation level.
5. To find the drying rate and drying time of different fruits and vegetables in flat plate based solar dryer.
6. To determine the efficiency of solar photo voltaic collector with and without sun tracking.

B. Tech. (7th Semester) Mechanical Engineering								
MEC-405L	**PROJECT-III**							
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Practical**	**Total Time**	**Time (Hrs.)**
0	**0**	**10**	**5**	**0**	**100**	**100**	**200**	**3**
Purpose:	To implement the engineering principles and theories into innovative practical projects for solving real world problems.							
Course Outcomes								
CO1	Students will be able to apply the theoretical knowledge into practical/software projects.							
CO2	Students will be able to design new products using latest technologies.							

The project work could be done for the problem statement of an industry or practical project in the institute. The students may also opt for the analysis based software projects with proper validation. Participation in any technical event/ competition to fabricate and demonstrate an innovative machine or product could be encouraged under this course.

Note: The maximum number of students in a group should not exceed four.

B. Tech. (7th Semester) Mechanical Engineering							
MEP-401	**COMPUTER AIDED DESIGN**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	To apply the computer's technology in designing.						
Course Outcomes							
CO1	To understand the fundamentals of CAD and analyze the CAD hardware.						
CO2	Students will be able to evaluate the CAD software and various transformation operations.						
CO3	Students will be able to analyze the geometric modeling.						
CO4	Students will be able to create surface modeling and understand the data exchange.						

UNIT-I

Fundamentals of CAD: Introduction, Traditional product cycle, CAD/CAM product cycle, rapid prototypic, design for everything, computer aided design, computer aided engineering, customer relationship management, product lifecycle management,

CAD hardware: Introduction, basic structure of computer, input, storage, processing, output, control, microcomputer, minicomputer, mainframes, supercomputer**,** input out device, LAN, MAN, WAN.

UNIT-II

CAD Software: Introduction, system software, application software, General CAD process, selection of CAD system, database management system, data structure, database types, function of database management system, advantages of DBMS, database coordinate system.

Geometric transformations: Introduction, 2D transformation, translation, rotation, scaling, homogeneous coordinate relationship, reflection transformation, shear transformation, inverse transformation for translation, rotation, scaling, reflection, shear, composite transformation, examples of composite transformation, geometric transformations in engineering design, solved examples.

UNIT-III

Geometric modeling: Need of geometric modeling, requirements of geometric modeling, wire frame modeling, surface modeling, solid modeling, difference between wireframe, surface and solid modeling, introduction to solid modeling, set theory, representation schemes for solid models, boundary representation, cellular decomposition, feature based modeling, Euler theory, mass property calculation.

Mathematical representation of 2D entity: Introduction, parametric representation, of analytic curves, lines, circle, conic selection, ellipse, parabola, hyperbola, parametric representation of synthetic curve, Hermite cubic spline curve, Bezier curves, B- spline curve, non-uniform rational, B splines, manipulation of curves.

UNIT-IV

Mathematical representation of surface entity: Introduction, surface entities, analytic surface, plane surface, tabulated surface, ruled surface, surface of revolution, sweep surface, synthetic surface, Hermite Bicubic surface, Bazier surface, bilinear surface, coons surface

Data exchange formats: Introduction, CAD/CAM data exchange, neutral file formats, data exchange format, initial graphics exchange specification, standard triangular language, standard for exchange of product data.

Text Books:

1. CAD/CAM – Principle Practice and Manufacturing Management - Chris McMahon and Jimmie Browne, Addison Wesley England, Second Edition, 2000.
2. CAD/CAM Theory and Practice, Mastering CAD/CAM - Ibrahim Zeid, Tata McGraw Hill Publishing Co. Ltd., New Delhi.

Reference Books:

1. Mathematical Elements for Computer Graphics - NC-Rogers, D.F. and Adams, McGraw Hill, NY, 1989
2. CAD/CAM/CIM - P. Radhakrishnan, S. Subramanayan and V. Raju, New Age International (P) Ltd., New Delhi.
3. CAD/CAM: Computer Aided Design and Manufacturing - Groover M.P. and Zimmers E. W., Prentice Hall International, New Delhi, 1992.
4. CAD/CAM/CAE - Chougule N. K, Scitech publications (INDIA) PVT. LTD.

Note: The paper setter will set the paper as per the question paper template provided.

B. Tech. (7th Semester) Mechanical Engineering							
MEP-403	**FINITE ELEMENT ANALYSIS**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	0	0	3	75	25	100	3
Purpose	The purpose of this course is to understand the formulation of FEA problems and to describe various methods of FEM. Also to understand the FEM with CI continuity and FDM.						
Course Outcomes							
CO1	Students will be able to understand the basic steps in FEM formulation. Also to study various concepts associated and assembly along with the boundary conditions in FEM formulation.						
CO2	Students will be able to analyze how FEM problems are formulated in 1-D elements. Also to discuss shape functions, h and p approximations; and various solvers associated in FEM.						
CO3	Students will be able to study FEM formulation of 2-D elements using various methods like Galerkin approach, Weighted Residual etc. Also to understand the natural coordinates, numerical integration and various other concepts related to 2-D FEM formulation.						
CO4	Students will be able to describe the axi-symmetric problems along with plane stress and plane strain problems with regards to solid mechanics. Also to discuss various elements of FEM, FEM with CI continuity and FDM problems.						

UNIT-1

Introduction: Basic steps in FEM formulation, general applicability of the method, variational functional, Ritz Method.

Variational FEM: Derivation of elemental equations, assembly, imposition of boundary conditions, solution of the equations.

UNIT-II

1-D Elements: Basis functions and shape functions, convergence criteria, h and p approximations, natural coordinates, numerical integration, Gauss elimination based solvers, computer implementation: pre-processor, processor, post-processor.

UNIT-III

Methods of FEA: Alternate formulation: Weighted Residual Method, Galerkin Method;

Problems with C1 Continuity: beam bending, connectivity and assembly of C1 continuity elements.

2-D Elements (Triangles and Quadrilaterals) and Shape Functions: Natural Coordinates, Numerical Integration, Elemental Equations, .Connectivity and Assembly, Imposition of Boundary Conditions.

Axisymmetric (Heat Conduction) problem, plane strain and plane stress solid mechanics problems, sub-parametric, iso-parametric and super-parametric elements; elements with C1 continuity.

UNIT-IV

Free vibration problems and FDM: Formulation of eigenvalue problems, FEM formulation, time-dependent problems, combination of Galerkin FEM and FDM (Finite Difference Method), convergence and stability of FD Scheme.

Text Books:

1. Finite element analysis-C. S. Krishnamoorthy, Tata McGraw Hill
2. An introduction to Finite element method-J. N Reddy, Tata Mc. Graw Hill
3. Finite Element Method with applications in Engineering-Y. M. Desai, Pearson Education India.

Reference Books:

1. Nonlinear Finite Elements for Continua and Structures (Paperback)-Belytschko (shelved 1 time as *finite-elements*)
2. The Finite Element Method for Three-Dimensional Thermomechanical Applications (Hardcover)-Guido Dhondt (shelved 1 time as *finite-elements*)
3. Numerical Solution of Partial Differential Equations by the Finite Element Method (Paperback)- Claes Johnson (shelved 1 time as *finite-elements*)

Note: The paper setter will set the paper as per the question paper template provided.

	B. Tech. (7th semester) Mechanical Engineering						
MEP-405	**POWER PLANT ENGINEERING**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	To understand modern aspects of power generation, different power plants, their combinations, operation and components, energy demand and supply and power plant economics.						
Course Outcomes							
CO1	Students will be able to analyze the economics of power generation and describe the variety of power plants.						
CO2	Students will be able to analyze steam power cycles and understand the coal handling process in detail.						
CO3	Students will be able to understand about the operation & advancements of Solar, Diesel and Gas turbine power plants.						
CO4	Students will be able to describe the role of nuclear energy in power generation and various combinations of power plants and their operation.						

UNIT-I

Economics of power generation: Introduction to economics of power generation, different terms and definitions, hydrology, rainfall, runoff, hydrographs, flow duration curves, cost analysis, power plant locations, selection of power plant equipment, factors affecting economics of generation and distribution of power, performance and operating characteristics of power plants, economic load sharing, tariff for electrical energy.

Different types of power plants: Recent developments in power plants, geothermal power plants, tidal power plants, windmills, solar power plants, hydroelectric power plant: site selection, classification, estimation of power availability, selection of water turbines, advantages and disadvantages of hydro power plants.

UNIT-II

Analysis of steam cycle: The ideal Rankine cycle, externally irreversible Rankine cycle, superheat, reheat, regeneration, internally irreversible Rankine cycle, open feed water heaters, closed type feed water heaters with drains cascaded backward and pumped forward, typical layout of steam power plant, efficiency and heat rate.

Coal handling plant: Coal Handling: unloading, feeding, crushing, feeding system, conveyor system, stacking system, magnetic separator/ metal detector, bin/chute vibratory system, coal weighment, coal sampling, fire-fighting system, dust suppression system, dust extraction system, mechanical stokers, pulverized fuels and burners, ash handling and disposal.

UNIT-III

Solar Power Plants: Introduction; solar collectors: flat plate and concentrating; absorber coating; solar pond electric power plant; solar thermal electric conversion systems: low temperature, medium

temperature and high temperature; solar electric power generation: solar photovoltaics, solar cell working and principle; combination of solar and hydropower plants; solar chimney power plant system.

Diesel engine & gas turbine power plants: Introduction, Types, layout of diesel engine power plant, different components of diesel power plant, performance characteristics, supercharging, layout and components of gas turbine power plants, gas turbine fuels, material selection for gas turbines.

UNIT-IV

Nuclear power plants: Basic theory and terminology, nuclear fission and fusion processes, fission chain reaction, moderation, fertile materials, nuclear fuels, general components of nuclear reactor, different types of reactors: PWR, BWR, GCR, LMFBR, CANDU-PHW, disposal of nuclear waste and related issues.

Power plant combinations: Combination of hydro power plants with steam plants, GT-ST Combined Cycle plant, combined cycles with heat recovery boiler, PFBC combined cycle, STIG (steam injected gas turbine) cycle, combined cycles with multi-pressure steam, combined cycle for nuclear power plants.

Text Books:

1. Power Plant Engineering-Morse, D. Van Nostrand.
2. Power Plant Engineering-PK Nag, McGraw Hill.
3. Power Plant Technology-El-Wakil, McGraw Hill.

Reference Books:

1. Power Plant Engineering-P.C. Sharma, SK Kataria & Sons.
2. Power Plant Engineering-Domkundwar, Dhanpat Rai & Co.
3. Power Plant Technology-G.D.Rai, Khanna Publishers.
4. Power Plant Engineering-R.K. Rajput, Laxmi Publications.

Note: The paper setter will set the paper as per the question paper templates provided.

B. Tech (7th Semester) Mechanical Engineering							
MEP-407	**MECHATRONIC SYSTEMS**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	The purpose of this course is to provide students with an in-depth knowledge of mechatronics systems. The subject will give knowledge of electronics components to students and assist them to acquire inter disciplinary skills.						
Course Outcomes							
CO1	Students will be able to understand Mechatronics systems and their applications. The students will be able to understand different sensors and transducers as well as able to select the transducers as per applications.						
CO2	Students will be able to describe different types of number systems and Boolean algebra and able to convert number systems from one system to another. The students will be able to explain pin configuration and architecture of microprocessor.						
CO3	Students will be able to understand the architecture of microcontroller and structure of PLC. The students will also be able to draw the ladder diagram.						
CO4	Students will be able to understand various types of actuator. The students will also be able to explain the working of DC and servo motor.						

UNIT-I

Introduction: Definition of mechatronics, multi-disciplinary scenario, evaluation of mechatronics, objectives, advantages & disadvantages of mechatronics, an overview of mechatronics, microprocessor based controllers, principle of working of automatic camera, automatic washing machine & engine management system.

Review of sensors and transducers: Definition and classification of transducers, definition & classification of sensors, performance terminology, working principle and application of displacement, position & proximity, velocity and motion, force, fluid pressure, liquid flow, liquid level, temperature, light sensors, selection of transducers.

UNIT-II

Digital principles: Introduction, digital number system, range and weight of binary number system, octal and hexadecimal number systems, conversion, BCD number systems, gray code, Boolean algebra, logic states, logic functions, more logic gates, universal gates, exclusive-OR gate, minimization of Boolean expression using Karnaugh map.

Microprocessor: 8086 CPU architecture: 8086 Block diagram, description of data registers, address registers; pointer and index registers, PSW, Queue, BIU and EU, 8086 Pin diagram descriptions, 8086 minimum mode and maximum mode CPU module.

UNIT–III

Micro controller: Introduction of 8051 microcontroller & its block diagram, comparison of microprocessor and microcontroller

PLC: Programmable logic controllers, basic structure, input/output processing, ladder diagram timers, internal relays and counters, shift registers, master and jump controls, data handling, analogue input/output, selection of a PLC.

UNIT–IV

Actuators: Definition, classification of actuators, mechanical actuation systems, types of motion, kinematics chains, cams, gear trains, ratchet and pawl, belt and chain drives, bearings, brief survey of electromechanical actuators, drive requirements for cutting movements, requirements of feed drives, calculation of drive requirements on feed motor shaft.

Motors: DC motors & Control of DC motors, DC & AC servomotors, stepper motors-types, characteristics, advantages, limitations and applications, mechanical aspects of motor selection.

Text books:

1. A Textbook of Mechatronics-R. K Rajput, S. Chand & Company, Edition 2010
2. Mechatronics, W. Bolton – Pearson Education Asia - 2nd Edition, 2011.

Reference books:

1. Mechatronics, HMT Ltd., McGraw Hill Education, 2017
2. Mechatronics Principles, Concepts and Application-Nitaigour and Premchand, Mahilik – Tata McGraw Hill – 2003
3. Mechatronics: An Introduction-Robert H. Bishop, CRC Press, 2015
4. Mechatronics: Integrated Mechanical Electronic System- Ramachandran, Vijayaraghavan, Balasundaran- Wiley Publication, 2008

Note: The paper setter will set the paper as per the question paper template provided.

B. Tech. 7th Semester Mechanical Engineering							
MEP-409	**INDUSTRIAL ROBOTICS**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	The purpose of this course is to make the students understand about the fundamental of robotics technology, its components and robotics cell design and control.						
Course Outcomes							
CO1	Students will be able to understand the fundamentals of robotics and find its applications.						
CO2	Students will be able to explain the use of different sensors and end effectors in robotics.						
CO3	Students will be able to describe the application of robotics in manufacturing.						
CO4	Students will be able to design and analyze the work cell and robotic motion.						

UNIT-I

Introduction: Automation and robotics, robotics in science fiction, a brief history of robotics, the robotics market and the future prospectus,

Fundamental of robotics: Robot anatomy, work volume, robot drives systems, control systems, precession of movement, end effectors, robot application.

UNIT-II

Sensors in robotics: Type of sensors in robotics, exteroceptors or external sensors, force and torque sensors, proximity sensors (position sensors), range sensors, machine vision sensors, velocity sensors. tactile sensor, proximately and range sensors, use of sensor in robotics.

Robot end effectors: Types of end effectors, characteristics of end-of-arm tooling, elements of end-of-arm tooling.

UNIT-III

Material transfer and equipments: General consideration in robot material handling, material transfer applications, machine loading and unloading,

Grippers: Tool selection of gripper, gripping mechanism, types of gripper, mechanical gripper, vacuum and magnetic grippers.

UNIT-IV

Robot cell design and control: Robot cell layouts, multiple robots and machine interface, other considerations in work cell design, work cell control, interlocks, the work cell controller, robot motion analysis and control: introduction to manipulator kinematics, manipulator path control, robot dynamics, configuration of robot control.

Text books:

1. Robot Analysis and Control- Asada, H., and J. J. Slotine, Wiley.

2. CAD/CAM: Computer Aided Design and Manufacturing- Groover M.P. and Zimmers E. W., Prentice Hall International, New Delhi.

Reference Books:

1. Robotics and Control-R. K. Mittal, I. J. Nagrath, McGraw Hill.
2. Fundamental of Robotics Analysis and Control-Robert J Schilling, Pearson
3. Industrial Automation and Robotics-J K Arora, Laxmi Publications

Note: The paper setter will set the paper as per the question paper templates provided.

B. Tech. (7th Semester) Mechanical Engineering							
MEP-411	**SOLAR ENERGY ANALYSIS**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	The purpose of this course is to make the students aware about the importance, availability, use and applications of solar energy.						
Course Outcomes							
CO1	Students will be able to describe the sun-earth relationships and various solar activities based on sun and earth rotation.						
CO 2	Students will be able to analyze the concentrating collector in solar energy applications and solar energy storage by different means.						
CO 3	Students will be able to apply the solar based heating-cooling concepts in building structures and explain the water heating flow systems.						
CO 4	Students will be able to analyze solar power generation, refrigeration and air-conditioning systems.						

Unit-I

Introduction: Basic Heat transfer principles, availability of solar energy, nature of solar energy, solar energy and environment, sun as the source of radiation, solar radiation: measurement of solar radiation, irradiance, solar constant, insolation, radiosity, emissive power, earth's equator, meridian longitude, sun earth angles, sunrise, sun set and day length, solar time, equation of time, various methods of using solar energy, photo thermal, photovoltaic, photosynthesis, present & future scope of solar energy.

Unit-II

Solar thermal energy: Stationary collectors, FPC, CPC, ETC, sun tracking, concentrating collectors, PTC, PDR, HFC, Fresnel collectors, solar thermal power plants, solar chimney power plant, solar pond, solar water heater, solar cooker, types- solar disinfection, limitations of solar thermal energy.

Heat Storage: Sensible and latent heat storage, chemical energy system, performance calculations.

Unit-III

Flow systems: Natural and forced flow systems, water heating systems for domestic, industrial and space heating requirements, solar distillation.

Solar heating and cooling: Direct, indirect and isolated heating concepts, cooling concepts, load calculation methods, performance evaluation methods.

Unit-IV

Solar thermal power generation: Introduction, paraboloid concentrating systems, cylindrical concentrating systems, central receiver system.

Solar refrigeration and air conditioning systems: Introduction, solar refrigeration and air conditioning systems, solar desiccant cooling.

Text Books:

1. Solar Thermal Engineering Process - Duffie and Beckman.
2. Advanced Solar Energy Technology - H.P. Garg, Kluver.
3. Solar Energy- S.P. Sukhatme, TMH.

Reference Books:

1. Solar Energy- J.S. Hsieh, Pearson College DIV.
2. Solar Thermal Engineering- P.J. Lunde, John Wiley & Sons.

Note: The paper setter will set the paper as per the question paper templates provided.

B. Tech. (7th Semester) Mechanical Engineering								
MEC-407	**INDUSTRIAL TRAINING-III**							
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Practical**	**Total**	**Time (Hrs.)**
2	**0**	**0**	**--**	**--**	**100**	**--**	**100**	**--**
Purpose	To provide an industrial exposure to the students and enhance their skills and creative capability for conversion of their innovative ideas into physical reality.							
Course Outcomes								
CO 1	Students will be able to self-improve through continuous professional development and life-long learning.							
CO 2	Students will be able to develop social, cultural, global and environmental responsibility as an engineer.							
CO 3	Students will be able to weigh all the latest changes in technological world.							

Note: MEC-407 is a mandatory non-credit course in which the students will be evaluated for the industrial training undergone for minimum 4 weeks after 6th semester and students will be required to get passing marks to qualify.

The candidate has to submit a training report of his/her work/project/assignment completed in the industry during the training period. The evaluation will be made on the basis of training report submitted and viva-voce/presentation.

Eighth Semester

B. Tech. (8th Semester) Mechanical Engineering								
MEC-402L	**Project-IV**							
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Practical**	**Total**	**Time (Hrs.)**
0	**0**	**10**	**5**	**0**	**100**	**100**	**200**	**3**
Purpose	To implement the engineering principles and theories into innovative practical projects for solving real world problems.							
Course Outcomes								
CO1	Students will be able to apply the theoretical knowledge into practical/software projects.							
CO2	Students will be able to design new products using latest technologies.							

The project work could be done for the problem statement of an industry or practical project in the institute. The students may also opt for the analysis based software projects with proper validation. Participation in any technical event/ competition to fabricate and demonstrate an innovative machine or product could be encouraged under this course.

Note: The maximum number of students in a group should not exceed four.

B. Tech. (8th Semester) Mechanical Engineering							
MEO-402	**SUPPLY CHAIN MANAGEMENT**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	The main objective of the course is to impart students with the knowledge of the performance, driver and metrics, network design, economies and uncertainties in Supply chain management.						
Course Outcomes							
CO1	Students will be able to explain the basics of Supply chain management and its performance.						
CO2	Students will be able to discuss supply chain metrics and the process of designing the supply chain networks.						
CO3	Students will be able to explain various aspects and functions of the supply chain network. Also, they will be able to explain the design process of the Global supply chain network.						
CO4	Students will be able to describe how to manage economies and uncertainties in the supply chain.						

UNIT-I

Understanding the supply chain: Introduction, definition, the objective of a supply chain, the importance of supply chain decisions, decision phases in a supply chain, process views of a supply chain, examples of supply chains.

Supply chain performance: Achieving strategic fit and scope: Competitive and supply chain strategies, achieving strategic fit, expanding strategic scope, challenges to achieving and maintaining strategic fit.

UNIT-II

Supply chain drivers and metrics: Financial measures of performance, drivers of supply chain performance, framework for structuring drivers, facilities, inventory, transportation, information, sourcing, pricing.

Designing the supply chain network: Designing distribution networks and applications to online sales: the role of distribution in the supply chain, factors influencing distribution network design, design options for a distribution network, online sales and the distribution network, distribution networks in practice.

UNIT-III

Network design in the supply chain: The role of network design in the supply chain, factors influencing network design decisions, framework for network design decisions, models for facility location and capacity allocation, making network design decisions in practice.

Designing global supply chain networks: The impact of globalization on supply chain networks, the offshoring decision: total cost, risk management in global supply chains, discounted cash flows, evaluating network design decisions using decision trees, to onshore or offshore: evaluation of global supply chain design decisions under uncertainty, making global supply chain design decisions under uncertainty in practice.

UNIT-IV

Managing economies of scale in a supply chain: Cycle inventory, the role of cycle inventory in a supply chain, estimating cycle inventory–related costs in practice, economies of scale to exploit fixed costs, economies of scale to exploit quantity discounts, short-term discounting: trade promotions, managing multi-echelon cycle inventory.

Managing uncertainty in a supply chain: Safety inventory, the role of safety inventory in a supply chain, determining the appropriate level of safety inventory, impact of supply uncertainty on safety inventory, impact of aggregation on safety inventory, impact of replenishment policies on safety inventory, managing safety inventory in a multie-chelon supply chain, the role of IT in inventory management, estimating and managing safety inventory in practice.

Text books:

1. Supply chain Management: Strategy, Planning and Operations - Chopra, S., and Meindl, P., Fifth Edition, Pearson Education (Singapore) Pte. Ltd, 2004.
2. Designing & Managing the Supply Chain: Concepts, Strategies & Case studies - Simchi-Levi, P., Kaminsky, Ravi Shankar, E., Third Edition, Tata McGraw-Hill Edition, 2003.

Reference books:

1. Purchasing and Supply Chain Management: Text and Cases - Doebler, D.W. and Burt, D.N., McGraw-Hill Publishing Company Limited, New Delhi, 1996.
2. Supply Chain Management for Competitive Advantage - Rangaraj, TMH.

Note: The paper setter will set the paper as per the question paper template provided.

B. Tech. (8th Semester) Mechanical Engineering							
MEO-404	**COMPETITIVE MANUFACTURING SYSTEMS**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	The objective of this course is to make the students understand about the concepts of competitive manufacturing management systems.						
Course Outcomes							
CO1	Students will be able to interpret the tactics, strategies and tools of continuous improvements of products and services.						
CO2	Students will be able to implement the just in time and total quality management philosophy for continuous improvement and identify the elements of lean and wasteless production.						
CO3	Students will be able to describe how to reduce the setup time and how to maintain and improve the equipment efficiency.						
CO4	Students will be able to explain the pull-push production system and will be able to know the systems for eliminating defects.						

UNIT-I

Fundamentals of continuous improvement: Continuous improvement as tactics and strategy-Incremental improvement: Kaizen, improvement threshold, innovation improvement making the leap, improvement as strategy, finding and implementing improvements-PDCA cycle, value analysis/value engineering, process engineering.

Basic problem solving and improvement tools: Check list, histogram, Pareto analysis, scatter diagram, process flow chart, cause and effect analysis, run diagram.

UNIT-II

JIT: value added and waste elimination: Value added focus- necessary and unnecessary activities, support organization, sources of waste-Toyota's seven wastes, Canon's none wastes, JIT principles-simplification, cleanliness and organization, visibility, cycling time, agility, variation reduction, ,measurement, Meaning of JIT-philosophy, method, JIT limitations and implementation barriers, social impact of JIT.

Total quality management (TQM): Quality, Framework for managing total quality, employee involvement, benchmarking, quality certification, implementing TQM.

Elements of lean production: Lot size basics-lot size and setup reduction, kinds of lots, Lot sizing-process and purchase batches, EOQ based methods, transfer batches, Lot size reduction- Effect of lot size reduction on competitive criteria, cases for larger process batches, minimum lot size, small buffer stock, EOQ models for lot sizing.

UNIT-III

Setup time reduction: Setup reduction methodology-Shingo and SMED, SMED methodology for setup reduction, techniques for setup reduction-separate internal and external activities, improve internal setups, improve external setups.

Maintaining and improving equipment: Equipment maintenance-breakdown repair, equipment problems and competitiveness, preventive maintenance, total predictive maintenance, Equipment effectiveness-equipment losses, maintainability, reliability, availability, efficiency, quality rate, preventive maintenance programs, Total productive maintenance-perform TPM preventive maintenance, develop in house quality to restore and redesign equipment, eliminate human error in operation and maintenance, Implementing TPM-program feasibility, master plan, target areas, management support.

UNIT-IV

Pull production systems: Production control systems, Pull systems and Push systems- pull production process, push production process, rules for pull production, process improvement, necessary conditions for pull production systems, pull system as a fixed quantity/reorder point system, conveyance Kanbans, production Kanbans, Signal Kanbans, CONWIP method of pull production.

Systems for eliminating defects: Inspection (screening), self-checks and successive checks, requirements for self-checking, successive checkings, automation, cycle time, limits of inspection, source inspection and POKAYOKE: POKAYOKE functions, ideas, continuous improvements, JIDOKA-autonomation, andons.

Text Books:

1. Competitive Manufacturing Management – John M. Nicholas, TMH.
2. Manufacturing Management – Principles and Concepts, Gibson, Greenhalgh and Kerr, Champan and Hall.

Reference Books:

1. Production and Operation Management – K.C. Jain, Dreamtech Press.
2. Operations management-William J. Stevenson, McGraw Hill Education.

Note: The paper setter will set the paper as per the question paper templates provided.

B. Tech. 8TH Semester Mechanical Engineering							
MEO-406	**CONCURRENT ENGINEERING**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	The objective of this course is to familiarize students with the concepts, approaches and implementation techniques related to concurrent engineering.						
Course Outcomes							
CO1	Students will be able to describe the basic concepts of concurrent engineering and implement concurrent engineering techniques.						
CO2	Students will be able to identify the concept of life cycle management.						
CO3	Students will be able to analyze reengineering and system engineering approaches and processes.						
CO4	Students will be able to appraise different information modeling systems and product realization taxonomy.						

UNIT – I

Concurrent engineering concept: Concurrent engineering definitions, basic principles of CE, components of CE, concurrency and simultaneity, modes of concurrency, modes of cooperation, CE design methodologies, benefits of concurrent engineering,

Review of CE technique: Design for manufacture (DFM), design for assembly (DFA), quality function deployment (QFD), rapid prototyping (RP), total design (TD), organizing for CE, CE tool box.

UNIT – II

Life-cycle management: Introduction, shrinking life-cycle, product development cycle, product-life cycle, life-cycle management, new product introduction, strategic technology insertions, managing continuity, managing revision changes, life-cycle cost drivers, life-cycle management tools, sequential versus concurrent engineering.

UNIT – III

Process-reengineering: Introduction, understanding and managing change, reengineering approaches work-flow mapping, information flow-charting, process improvement methodology, change management methodology, concurrent process reengineering.

System engineering: System engineering process, systems thinking, approaches to system complexity, sharing and collaboration in CE, system integration, management and reporting structure.

UNIT – IV

Information modeling systems: Information modeling, modeling methodology, foundation of information modeling, concurrent engineering process invariant, enterprise model-class, specification model-class, product model-class, process model-class, cognitive models, merits and demerits.

Product realization taxonomy: Development methodology for CPRT, concurrent product realization taxonomy, pull system of product realization, description of parallel tracks, description of 2-T loops, description of 3-T loop.

Text Books:-

1. Concurrent Engineering Fundamental, (Vol 1) integrated Product and Process Organization - Biren Prasad.
2. Concurrent Engineering - G.S. SAWHNEYUNIVERSITY SCIENCE PRESS (An Imprint of Laxmi Publications Pvt. Ltd.) An ISO 9001:2008 Company.
3. Concurrent Engineering Fundamentals: Integrated Product Development - Prasad, Prentice hall India

Reference Books:

1. Design for Concurrent Engineering - J. Cleetus, CE Research Centre, Morgantown
2. Concurrent Engineering in Product Design and Development - I. Moustapha, New Age International
3. Concurrent Engineering: Automation Tools and Technology - Andrew Kusiak - , Wiley Eastern

Note: The paper setter will set the paper as per the question paper templates provided.

B. Tech. (8th Semester) Mechanical Engineering							
MEO-408	**LUBRICANTS AND LUBRICATION**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	The purpose of the course is to make the students aware of the different properties and composition of lubricants and understand the fundamental concepts of hydrodynamic, hydrostatic and extreme pressure lubrication.						
Course Outcomes							
CO1	Students will be able to describe properties and composition of lubricants.						
CO2	Students will be able to understand the basics of hydrodynamic lubrication and analyse the thermal and non-Newtonian effects in hydrodynamic lubrication.						
CO3	Students will be able to explain and analyze the hydrostatic lubrication, and extreme pressure lubrication at different temperature-load combinations.						
CO4	Students will be able to understand and analyze the elastohydrodynamic lubrication.						

UNIT-I

Physical properties of lubricants: Introduction, relationship of viscosity with temperature, pressure and shear rate, viscosity index, viscosity measurement, viscosity of mixtures; Viscosity classification, thermal properties of lubricants, temperature characteristics of lubricants, neutralization number, carbon residue, optical properties, additive compatibility and solubility, lubricant impurities and contaminants.

Lubricants and their composition: Mineral oil based liquid lubricants – sources, types, synthetic oils – manufacturing of synthetic oils, hydrocarbon synthetic lubricants, silicon analogues of hydrocarbons, organohalogens; new developments in synthetic lubricants, emulsions and aqueous lubricants, greases, grease characteristics, lubricant additives.

UNIT-II

Hydrodynamic lubrication: Introduction, Reynolds equation, pressure distribution, load capacity, coefficient of friction, lubricant flow; converging diverging wedges, journal bearings, thermal effects in bearings, isoviscous and non-isoviscous thermal analysis, hydrodynamic lubrication with non-Newtonian fluids, squeeze films.

UNIT–III

Hydrostatic lubrication: Introduction, hydrostatic bearing analysis, general approach, optimization of bearing design, aerostatic bearings, stability.

Extreme pressure lubrication: Lubrication mechanisms for low temperature-low load, low temperature - high load, high temperature – medium load and high temperature – high load, boundary and EP lubrication of non-metallic surfaces.

UNIT–IV

Elastohydrodynamic lubrication: Introduction, contact stresses, geometry of contacting bodies, contact area, pressure, maximum deflection and position of maximum shear stress, EHL of lubricating films,

pressure distribution, film thickness formulae, effect of non-dimensional parameters, lubrication regimes, partial EHL, surface temperature at conjunction.

Text books:

1. Engineering Tribology - Gwidon W. Stachowiak, Andrew W. Batchelor, Butter worth, Heinemann.
2. Introduction to Tribology of Bearings - B.C. Majumdar, S. Chand Co.

Reference books:

1. Friction and Lubrication - E.P. Bowden and Tabor. D., Heinemann Educational Books Ltd.
2. Engineering Tribology - Ross Beckett, Larsen and Keller Education
3. Fundamentals of Fluid Film Lubrication - Bernard Hamrock, Bo Jacobson, and Steven R. Schmid, Taylor and Francis.

Note: The paper setter will set the paper as per the question paper template provided.

B. Tech. 8th Semester) Mechanical Engineering							
MEO-410	**TOTAL QUALITY MANAGEMENT**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	The purpose of this course is to develop an understanding of quality management framework, philosophies, in-depth knowledge of various tools and techniques with their application in the manufacturing and service industry.						
Course Outcomes							
CO1	Students will be able to understand quality management philosophies and frameworks.						
CO2	Students will be able to describe various tools and techniques of quality management.						
CO3	Students will be able to explain the applications of quality tools and techniques in both manufacturing and service industry						
CO4	Students will be able to describe various quality systems like ISO and its standards.						

UNIT-I

Introduction and philosophies of quality management: introduction, need for quality ,evolution of quality, definitions of quality, dimensions of product and service quality, basic concepts of TQM, TQM framework, benefits, awareness and obstacles, quality, vision, mission and policy statements, contributions of Deming, Juran and Crosby , barriers to TQM, quality statements, customer focus, customer orientation, customer satisfaction, customer complaints, and customer retention, costs of quality.

UNIT-II

Principles of quality management: Leadership, strategic quality planning, quality councils, employee involvement, motivation, empowerment, team and teamwork, quality circles recognition and reward, performance appraisal, continuous process improvement , PDCA cycle, 5S, Kaizen , supplier partnership, partnering, supplier selection, supplier rating.

Process capability: Meaning, significance and measurement, six sigma concepts of process capability.

UNIT–III

Tools and techniques for quality management: Quality functions development (QFD), benefits, voice of customer, information organization, house of quality (HOQ), building a HOQ, QFD process.

Failure mode effect analysis (FMEA): Requirements of reliability, failure rate, FMEA stages, design, process and documentation, seven old (statistical) tools, seven new management tools, bench marking and POKAYOKE.

UNIT–IV

Quality systems organizing and implementation: Need for ISO: 9000, ISO: 9001-2008 quality system, elements, documentation, quality auditing, QS: 9000, ISO: 14000, concepts, requirements and benefits, TQM implementation in manufacturing and service sectors, quality audits, TQM culture.

Text Books:

1. Total Quality Management-Dale H. Besterfield, Pearson Education (First Indian Reprints 2004).

2. Total Quality Management-Shridhara Bhat K, Himalaya Publishing House, First Edition 2002.

Reference Books:

1. Competitive Manufacturing Management – John M. Nicholas, TMH.
2. Total Quality Management- R Kesavan, C Elanchezhian, B Vijaya Ramnath, IK International.
3. Total Quality Management: Principles, Methods, and Applications-Sunil Luthra, Dixit Garg, Ashish Agarwal, Sachin K. Mangla, CRC Press.
4. Total Quality Management-Poornima M. Charantimath, Pearson Pub.

Note: The paper setter will set the paper as per the question paper template provided.

B. Tech. 8th Semester) Mechanical Engineering							
MEO-412	**ENERGY CONSERVATION AND MANAGEMENT**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Objective	To impart students, the knowledge of various energy management and conservation techniques, building audit and survey procedures for energy management.						
Course Outcomes							
CO1	Students will be able to describe various renewable sources of energy and the technicalities, operating principles and classification of HVAC Systems.						
CO2	Students will be able to describe the methodology of Site and Building Surveys.						
CO3	Students will be able to explain various energy analysis techniques and the principle and classification of Process Energy.						
CO4	Students will be able to discuss the implementation of various energy management techniques in building designs.						

UNIT-I

Renewable energy: Introduction; solar energy; wind energy; energy from water; energy from earth; energy from biomass.

Heating, venting and air conditioning systems: General principles; the requirements for human comfort; description of typical systems-dual duct HVAC system; multi zone HVAC systems: variable and volume systems, terminal repeat system, evaporative systems, package system; basic principle governing HVAC system, package system; energy management opportunities in HVAC systems; modeling of heating and cooling loads in buildings; problems.

UNIT-II

Site and building surveys: Phases involved in surveys: initiation phase, audit and analysis phase, implementation phase; general methodology for building and site energy audit; site survey: methodology, site survey-electrical system, steam and water systems; building survey: methodology, basic energy audit instrumentation, measurement for building surveys.

UNIT-III

Energy analysis techniques: Introduction; annual energy consumption; normalized performance indicators; time-dependent energy analysis; linear regression; single independent; correlation coefficients; multivariable analysis; CUSUM.

Process energy: General principles; process heat; energy saving in: condensate return, steam generation and distribution, automotive fuel control, hot water and water pumping; direct and indirect fired furnaces over process electricity; other process energy forms-compressed air and manufacturing processes; problems.

UNIT-IV

Waste heat recovery: Introduction, recuperative heat exchangers, heat exchanger theory; number of transfer units (NTU) concept, run-around coils, regenerative heat exchangers, heat pumps, energy

efficient heating: thermal comfort, building heat loss; U values, heat loss calculations, heating energy calculations; intermittent heating; radiant heat; radiant heating; low-emissivity glazing.

Passive solar and low energy building design: Introduction, passive solar heating, direct gain techniques, indirect gain techniques, isolated gain techniques, thermosiphon systems, passive solar cooling, shading techniques, solar control glazing, advanced fenestration, natural ventilation, thermal mass, night venting, termodeck, building form, building operation.

Text Book:

1. Energy Management and Conservation Handbook, Second Edition - Frank Kreith, D. Yogi Goswami.
2. Energy Management, Supply and Conservation, Second Edition - Clive Beggs
3. Energy Management Principles - Criag B. Smith, Published by Pergamon Press.
4. Energy Systems and Developments – Jyoti Parikh, Oxford University Press.

Reference Books:

1. Energy, Resources, Demand and Conservation with reference to India – Chaman Kashkari, Tata Mc Graw Hill Co. Ltd.
2. Integrated Renewable Energy for Rural Development–Proceedings of Natural Solar Energy Convention, Calcutta.

Note: The paper setter will set the paper as per the question paper templates provided.

B. Tech. 8th Semester) Mechanical Engineering							
MEP-402	**Non-Conventional Machining**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	This course provides comprehensive knowledge about the advanced technologies and different Non-conventional machining processes.						
Course Outcomes							
CO 1	Students will be able to compare conventional and non-conventional machining processes and recognize the need for Non-conventional machining processes.						
CO 2	Students will be able to know about the constructional features, performance parameters, process characteristics, applications, advantages and limitations of USM.						
CO 3	Students will be able to know about the constructional features, performance parameters, process characteristics, applications, advantages and limitations of AJM, WJM and AWJM.						
CO 4	Students will be able to identify the need of chemical and electro-chemical machining processes along with the constructional features, process parameters, process characteristics, applications, advantages and limitations.						
CO 5	Students will be able to explain the constructional feature of the equipment, process parameters, process characteristics, applications, advantages and limitations EDM, LBM and EBM.						

UNIT-I

Introduction to non-conventional machining: Introduction to non-conventional machining(NCM) processes, characteristics of conventional machining processes, characteristics of non-conventional machining processes, need for development of non-conventional machining processes, comparison of conventional and non-conventional machining processes, , classification of non-conventional machining processes, history of non-conventional processes, advantages of non-conventional machining processes, disadvantages of non-conventional machining processes, applications of non-conventional machining processes.

Ultrasonic machining (USM): process principle, equipment, design consideration for tool, tool feed mechanism, abrasive slurry, Liquid media, operation of USM, process parameters, process capabilities, mechanics of cutting in USM applications of USM, advantages of USM, disadvantages of USM, Mechanics of cutting in USM, ultrasonic welding

UNIT-II

Abrasive jet machining (AJM): process principle, equipment, process parameters, process capabilities, applications of AJM, advantages of AJM, disadvantages of AJM, Mechanics of cutting in AJM.

Water jet machining (WJM): process principle, equipment, process parameters, process capabilities, Metal removal rate, applications of WJM, advantages of WJM, disadvantages of WJM.
Abrasive water jet machining (AWJM): process principle, equipment, process parameters, process capabilities, Metal removal rate, applications of AWJM, advantages of AWJM, disadvantages of AWJM.

UNIT-III

Chemical machining: Introduction, process principle, five steps of chemical machining, elements of process, Influence of etchant medium, selection of maskant and etchants, chemical blanking, accuracy of chemical blanking, applications of chemical machining, advantages of chemical machining, disadvantages of chemical machining, chemical milling, photochemical machining.
Electrochemical machining (ECM): classification of ECM processes, fundamental principles of ECM, elements of ECM process, electro-chemistry of ECM process, process parameters, process characteristics, tool design, accuracy, determination of metal removal rate, evaluation of metal removal rate of an alloy, surface finish and work material characteristics, economic consideration, advantage, limitation and application, basics of electrochemical grinding, deburring and honing.

UNIT-IV

Electric discharge machining (EDM): Principal and metal removal mechanism, generators, electrode feed control, electrode material, tool electrode tool design, EDM wire cutting, surface finish, accuracy and application.
Laser beam machining (LBM): Introduction, generation of LASER, Equipment and mechanism of metal removal, LBM parameters and characteristics, Applications, Advantages & limitations.
Electron beam machining (EBM): Introduction, Principle, equipment and mechanism of metal removal, applications, advantages and limitations.

Text Books:

1. Unconventional Machining processes- T. Jagdeesha, I.K. International Publishing house
2. Advanced Machining processes- V.K. Jain, Allied Publishers private Ltd.
3. Unconventional Manufacturing process- M.K. Singh, New Age International
4. Modern machining processes – P.C. Pandey and M.S. Shan, TMH

Reference Books:

1. Non-traditional Manufacturing Processes –G.F. Benedict, Marcel Dekker,Inc.
2. Advanced Method of Machining –J.A. McGeough, Chapman and Hall.
3. Electrochemical Machining of Metals –Ruryantsev & Davydov, Mir Pub.

Note: The paper setter will set the paper as per the question paper template provided.

B. Tech. (8th Semester) Mechanical Engineering							
MEP-404	**AUTOMOBILE ENGINEERING**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	The objective of this course is to enable the students to understand various automobiles and their components. Also to describe the steering geometry, components and the mechanism involved in the automobile.						
Course Outcomes							
CO1	Students will be able to understand the basics of the engine cylinder and functions of the clutch.						
CO2	Students will be able to explain the working of the gearbox, transmission, and new safety features etc.						
CO3	Students will be able to describe how the rear axle, brake systems and wheel operate.						
CO4	Students will be able to understand the steering geometry and suspension system.						

UNIT-I

Introduction: Classification of automobile engines, use of engines, merits and demerits of vertical and horizontal engines, reasons for using single-cylinder two-stroke air-cooled petrol engine on two-wheelers, reasons for using multi-cylinder diesel engine for commercial vehicles, merits and demerits of two-stroke and four-stroke cycle engines, advantages of a multi-cylinder engine for the same power.

Clutch: Introduction, function of a clutch, main parts of a clutch, clutch types, clutch actuating mechanism, clutch construction, driven member-(friction or clutch disc), automatic transmission devices, troubleshooting/service procedures.

UNIT-II

Gear box: Introduction, type of gear boxes, three speed gearbox, merits and demerits of gear boxes, gear shifting mechanisms, epicyclic gearbox, gear reduction, overdrive, Maruti 800 gear box, five-speed gearbox, six speed gearbox.

Propeller shaft, universal joint and other features: Introduction, drive mechanism from gearbox to final drive in cars, propeller shaft (constructional features), shaft, universal joints, centre bearing in propeller shaft drive, propeller shaft, problems, ABS, GPS vehicle tracking, autonomous emergency braking (AEB), automatic transmission, electronic stability control (ESC), forward collision warning.

UNIT-III

Rear axle assembly: Introduction, purpose of the final drive, final drive requirements, the final drive, the differential, axle housing, maintenance of rear axle, troubleshooting in differentials.

Brake system: Introduction, functions of a brake, requirements of a brake system, brake actuating mechanism, leading and trailing shoes, classification of brakes, tandem master cylinder, drum brakes, self-energized brakes, disc brakes, floating-caliper brakes, power brakes, air-hydraulic brakes, air brake system, emergency and parking brakes.

Wheel and tyre: Introduction, types of automobile wheels, tyres, types of tyres, tyre tread, tyre selection, tyre service parameters, tyre maintenance.

UNIT-IV

Suspension system: Introduction, brief history, need for a good suspension system, stages in suspension system, elements of a suspension system, suspension systems, suspension system maintenance and troubleshooting, inspection and service of suspension system (general), troubleshooting of suspension systems.

Steering and front axle: Function of the steering system, steering gears, steering mechanisms used in some Indian vehicles, steering linkage, steering wheel and column, front axle, steering heads, steering geometry, wheel alignment, adjusting steering angles, Ackerman linkage, power Steering, under steering and over steering, steering lock, turning radius.

Text Books:

1. Automobile Engineering -By K.M. Gupta, Umesh Publications.
2. Automobile Engineering- Sudheer kumar, University Science Press.
3. Automobile Engineering- K.K Jain, Tata McGraw-Hill Publishing Company Limited.

Reference Books:

1. The Motor Vehicle - By Newton, Steeds and Garrett Basic.
2. Automobile Engineering - By Kirpal Singh, Standard Publication.

Note: The paper setter will set the paper as per the question paper template provided.

B. Tech. (8th Semester) Mechanical Engineering							
MEP-406	**PRODUCT DESIGN AND MANUFACTURING**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	The objective of the course is to understand the importance of design factors, manufacturing, assembly and environmental guidelines, prototyping and patenting requirements in product design, manufacturing, development and economics.						
Course Outcomes							
CO1	Students will be able to describe the concept of product design, design considerations, design practiced by the industry, production and marketing, and aesthetics.						
CO2	Students will be able to explain and apply manufacturing, assembly and environmental guidelines in product design, manufacturing and development.						
CO3	Students will be able to apply the value engineering concepts in product designing and will be able to understand the application of prototyping in product design.						
CO4	Students will be able to explain the patenting, and intellectual property. They will also be able to understand the manufacturing and economic aspects related to a product.						

UNIT-I

Introduction: Introduction to product design, design by evolution and innovation, essential factors of product design, production consumption cycle, flow and value addition in production consumption cycle, morphology of design (the seven phases)

Product design practice and industry: Product strategies, time to market, analysis of the product, the three s's, designer and his role, myth and reality, basic design considerations, problems faced by industrial designer, role of aesthetics in product design.

UNIT-II

Design for manufacture and assembly: Overview and motivation, basic method: design guidelines: design for assembly, design for piece part production, advanced method: manufacturing cost analysis, cost driver modeling, critique for design for assembly method.

Design for the environment: Environmental objectives, basic DFE methods, design guidelines, life cycle assessment, techniques to reduce environmental impact.

UNIT-III

Value engineering: Value, nature and measurement of value, maximum value, normal degree of value, importance of value, value analysis job plan, creativity, steps to problem solving and value analysis, value analysis tests, value engineering idea generation checklist, cost reduction through value engineering-case study, materials and process selection in value engineering.

Prototyping: Prototyping essentials, types of prototypes, uses of prototypes, reverse engineering, rapid prototyping techniques, scale, dimensional analysis, and similitude, basic method: physical prototype design and planning- guidelines for prototype design, sample prototype application, 3-D printing.

UNIT-IV

Patents and intellectual property: What is intellectual property? Overview of patents, utility patents, invention disclosure.

Product development economics: Elements of economic analysis, base case financial model, sensitive analysis, project trade-offs, influence of qualitative factors on project success, qualitative analysis.

Text Books:

1. Product Design and Development-Karl T. Ulrich and Steven D Eppinger, TMH.
2. Product Design and Engineering-A. K. Chitale and Gupta, PHI.

Reference Books:

1. Product Design and Process Engineering-Niebel and Draper, McGraw-Hill.
2. Product Design-Techniques in Reverse Engineering and New Product Development- Kevin Otto and Kristin Wood, Pearsons.

Note: The paper setter will set the paper as per the question paper templates provided.

B. Tech. (8th Semester) Mechanical Engineering							
MEP-408	**WELDING TECHNOLOGY**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	To expand the student's knowledge base and practical aspects in various areas of welding processes.						
Course Outcomes							
CO 1	Students will be able to explain the applications of welding and allied processes in various industries.						
CO 2	Students will be able to select arc welding power source and process parameters based on particular applications.						
CO 3	Students will be able to describe working of various gas welding equipment and will be able to suggest weld positions based on the application.						
CO 4	Students will be able to test weld for different defects and learn about the performance of TIG welding of aluminium and MIG welding of steels.						

UNIT-I

Introduction to welding technology: History of metal-working, early developments in welding, development of modern welding, functions of welding in industries, application of welding in different industries

Welding and allied processes: Fusion welding, electric resistance welding, solid phase welding, braze welding, thermal cutting, thermal spraying, welding compared to riveting and casting.

UNIT-II

Arc welding process and equipment: Working principle of arc welding processes, static characteristics curves, open circuit voltage, current rating and duty cycles, classes of insulation, power factor.

Different types of AC and DC power sources, arc welding transformers; methods to control welding current in welding transformers, arc welding generators, arc welding rectifiers comparison of power source, factors for selection of power sources.

Special power sources; universal type, multi-operator type, solid state power source, inverter based multi-process power source units.

UNIT–III

Gas welding process and equipment: Working principle of gas welding process, gases used, welding flames, setup and equipment, gas cylinders, handling fuel and oxygen cylinders, pressure regulators, hoses, welding torch; selection of welding torch tip size, torch lighters, lighting equal pressure type torch, lighting injector type welding torch, torch adjustments, shutting off torch, torch position and movements, puddling, types of oxy-acetylene welds made without the use of welding rod and with the use of welding rod, selection of welding rod size, welding positions, trolleys, filler rod and fluxes, protective equipment and clothing.

UNIT–IV

Inspection and testing welds: Non-destructive tests, destructive tests, visual inspection, magnetic particle inspection, liquid particle inspection, ultrasonic inspection, X-ray inspection, eddy current inspection, inspecting welds using pneumatic and hydraulic pressure, bend tests, impact tests, laboratory methods of testing welds

TIG welding of aluminum and magnesium: TIG equipment for aluminium, clean the parts using caustic cleaners and scouring pads, heat transfer in aluminium, aluminium arcing, balling tungsten, welding machine settings, striking the arc, aluminium weld procedure, square wave welders, TIG welding magnesium, TIG welding aluminium cylinder heads, weld fixture.

MIG welding of steel and stainless steel: Metal transfer modes, wire size, starting to MIG weld, aircraft seat welding, stress relieving, MIG welding tips, MIG welding stainless steel, backside protection, MIG welding titanium

Text books:

1. Welding Principle and Practices- Edward R. Bohnart, McGraw-Hill Publications.
2. Modern Arc Welding Technology -S.V. Nadkarni, Oxford and IBH Publishing Pvt. Ltd.
3. Modern Welding - Althouse, Goodheart Willcox co. Inc.
4. Performance Welding Handbook - Robert Finch, MBI publishing company.
5. Welding Processes and Technology - O.P. Khanna, Dhanpat rai publications
6. Welding Science and Technology- Ibrahim Khan, New Age International Publishers.
7. Welding Processes and Technology - R.S. Parmar, Khanna Publishers

Reference books:

1. Welding - A.C. Davies, Cambridge University Press.

Note: The paper setter will set the paper as per the question paper template provided.

	B. Tech. (8th Semester) Mechanical Engineering						
MEP-410	**DESIGN OF PRESSURE VESSELS AND PIPING**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	The course aims to impart basic knowledge of design of pressure vessels and piping system. It is also aimed to introduce various standards used for the pressure vessel design.						
Course Outcomes							
CO1	Students will be able to analyze thin plates and shells for various types of stresses.						
CO 2	Students will be able to design shells, end closures and tall cylinder columns of pressure vessels.						
CO 3	Students will be able to explain the buckling and fracture in the pressure vessel.						
CO 4	Students will be able to design piping systems and explain the piping code, behavior and support.						

Unit-I

Stresses in pressure vessels: General theory of membrane stresses in vessel under internal pressure and its application to shells (cylindrical, conical and spherical) and end closures, bending of circular plates and determination of stresses in simply supported and clamped circular plate, thermal stresses, stress concentration in plate having circular hole due to bi-axial loading, excessive elastic deformation, plastic instability, brittle rupture and creep, theory of reinforced opening and reinforcement limits.

Unit-II

Design of vessels: Design of tall cylindrical self-supporting process columns, supports for short vertical vessels, stress concentration: at a variable thickness transition section in a cylindrical vessel, about a circular hole, elliptical openings, theory of reinforcement, pressure vessel design.

Unit-III

Buckling and fracture analysis in vessels: Buckling phenomenon, elastic buckling of circular ring and cylinders under external pressure, collapse of thick walled cylinders or tubes under external pressure, effect of supports on elastic buckling of cylinders, buckling under combined external pressure and axial loading, control and significance of fracture mechanics in vessels, FEM application

UNIT-IV

piping design: Flow diagram, Piping layout and piping stress analysis; Flexibility factor and stress intensification factor; Design of piping system as per B 31.1 piping code. Piping components - bends, tees, bellows and valves. Types of piping supports and their behaviour; Introduction to piping Codes and Standards.

Text Book:

1. Theory and Design of Pressure Vessels-John F. Harvey, CBS Publishers and Distributors, 1987.
2. American Standard Code for Pressure Piping, B 31.1", ASME.

3. Pressure Vessel Design Handbook-Henry H Bednar, CBS publishers and distributors
4. Chemical Process Equipment, Selection and Design-Stanley M Wales, Butterworths, Series in Chemical Engineering, 1988. Elsevier.
5. Pressure Vessels: ASME Code Simplified-J. Phillip Ellenberger, ASME.
6. Fundamentals of Piping Design-Smith P, Elsevier.

Reference Books:

1. Pressure Vessels, Design Hand Book-Henry H. Bedner, CBS Publishers and Distributors, 1987.
2. Chemical Process Equipment, Selection and Design-Butterworths series in Chemical Engineering", Stanley, M. Wales, 1988
3. Pressure Vessel Design-Harvey J F, CBS Publication.
4. Process Equipment Design-Brownell L. E and Young. E. D, Wiley Eastern Ltd., India
5. ASME Pressure Vessel and Boiler Code-Section VIII Div. 1, 2, and 3", ASME.

Note: The paper setter will set the paper as per the question paper template provided.

B. Tech (8th Semester) Mechanical Engineering							
MEP-412	**QUALITY AND RELIABILITY ENGINEERING**						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time (Hrs.)**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3**
Purpose	The purpose of this course is to provide students with an in-depth knowledge of quality and reliability. The course addresses the principles and techniques of Statistical Quality Control and their practical uses as well as give insight to modern reliability engineering tools.						
Course Outcomes							
CO1	Students will be able to understand the concept of quality value and engineering and application of statistical methods for quality control. The student will also be able to solve the problems related with dispersion of data.						
CO2	Students will be able to understand different control charts and will solve the problems on control charts. They will also understand various sampling plans and design sampling plans.						
CO3	Students will be able to explain the loss function and tolerance design for online quality control. They will come to know the concept of reliability and will be able to understand the mathematical derivations of different failure rates.						
CO4	Students will be able to describe various hazard models and solve problems for finding reliability of complex systems.						

UNIT-I

Quality value and engineering: Quality systems, quality engineering in product design and production process, system design, parameter design, tolerance design, statistical methods for quality control and improvement, mean, median, mode, standard deviation, calculating area, Normal distribution tables, finding the Z score, Central limit theorem.

UNIT-II

Variation in process: Control charts for variables: X-bar and R charts, Control charts for attributes P, C and U-Chart, Establishing and interpreting control charts process capability, Quality rating, Short run SPC.

Acceptance sampling by variables and attributes, single, double, sequential and continuous sampling plans, design of various sampling plan.

UNIT–III

Loss function, tolerance design: N type, L type, S type; determination of tolerance for these types, online quality control – variable characteristics, attribute characteristics, parameter design.

Concept and definition of reliability: Reliability Parameters: Reliability as a function of time, failure rate as a function of time, Bath-tub curve, constant failure rate, increasing failure rate, mean time to failure (MTTF), MTTF as a function of failure rate, mean time between failure (MTBF), mean down time (MDT), maintainability & availability

UNIT–IV

Brief discussion on hazard models: Constant hazard model, linearly increasing hazard model, nonlinear hazard model and Weilbull distribution, Advantages of weibull distribution, System reliability models: series system, parallel system, series-parallel system

Complex system: Reliability of series, parallel & standby systems & complex systems & reliability prediction and system effectiveness, reliability testing

Text books:

1. Reliability Engineering, (3rdEdition) - LS Srinath, Affiliated East West Pvt Ltd, 1991..
2. Reliability Engineering- E. Bala Guruswamy, Tata McGraw Hill, 1994.
3. Statistical Quality Control- M. Mahajan, Dhanpat Rai & Co., 2018.
4. Statistical Process Control- Eugene Grant, Richard Leavenworth, McGraw Hill.

Reference books:

1. Introduction to Reliability Engineering- Lewis E. E., John Wiley & Sons - 1987
2. Reliability Based Design-Rao S. S., McGraw Hill - 1992
3. Practical Reliability Engineering- O'cconer P. D. T., John Wiley & Sons Ltd. - 2003
4. Statistical Quality Control-Eugene G. L., McGraw-Hill - 1996

Note: The paper setter will set the paper as per the question paper template provided.

BACHELOR OF TECHNOLOGY (MECHANICAL ENGINEERING) CREDIT BASED
KURUKSHETRA UNIVERSITY KURUKSHETRA
SCHEME OF STUDIES/EXAMINATION
SEMESTER V (w.e.f. session 2021-2022)

S. No.	Course No.	Course Name	L:T:P	Hours/ Week	Credits	Examination Schedule (Marks)				Duration of Exam (Hrs.)
						Major Test	Minor Test	Practical	Total	
1	HTM-901	Universal Human Values II : Understanding Harmony	3:0:0	3	3	75	25	0	100	3
2	MEC-301	Heat Transfer	3:1:0	4	4	75	25	0	100	3
3	MEC-303	Production Technology	3:0:0	3	3	75	25	0	100	3
4	MEC-305	Mechanical Vibrations and Tribology	3:0:0	3	3	75	25	0	100	3
5	MEC-307L	Heat Transfer lab	0:0:2	2	1	0	40	60	100	3
6	MEC-309L	Production Technology Lab	0:0:2	2	1	0	40	60	100	3
7	MEC-311L	Mechanical Vibrations and Tribology Lab	0:0:2	2	1	0	40	60	100	3
8	MEC-313L	Project-I	0:0:2	2	1	-	0	100	100	3
9	*MEC-315	Industrial Training-II	2:0:0	2	-	-	100	-	100	-
10	**MC-903	Essence of Indian Traditional Knowledge	3:0:0	3	-	100	-	-	100	3
			Total	**26**	**17**	**300**	**220**	**280**	**800**	

*MEC-315 is a mandatory non-credit course in which the students will be evaluated for the industrial training undergone after 4th semester and students will be required to get passing marks to qualify.

**MC-903 is a mandatory credit-less course in which the students will be required to get passing marks in the major test.

HTM-901	Universal Human Values II: Understanding Harmony						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
3	**0**	**0**	**3.0**	**75**	**25**	**100**	**3 Hours**
Purpose	Purpose and motivation for the course, recapitulation from Universal Human Values-I						
Course Outcomes (CO)							
CO 1	Development of a holistic perspective based on self-exploration about themselves (human being),family, society and nature/existence.						
CO 2	Understanding (or developing clarity) of the harmony in the human being, family, society and nature/existence.						
CO 3	Strengthening of self-reflection.						
CO 4	Development of commitment and courage to act.						

Module 1: Course Introduction - Need, Basic Guidelines, Content and Process for Value Education

1. Purpose and motivation for the course, recapitulation from Universal Human Values-I
2. Self-Exploration–what is it? - Its content and process; 'Natural Acceptance' andExperiential Validation- as the process for self-exploration
3. Continuous Happiness and Prosperity- A look at basic Human Aspirations
4. Right understanding, Relationship and Physical Facility- the basic requirements for fulfilment ofaspirations of every human being with their correct priority
5. Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario
6. Method to fulfil the above human aspirations: understanding and living in harmony at variouslevels.

Include practice sessions to discuss natural acceptance in human being as the innate acceptance for living with responsibility (living in relationship, harmony and co-existence) rather than as arbitrarinessin choice based on liking-disliking

Module 2: Understanding Harmony in the Human Being - Harmony in Myself!

7. Understanding human being as a co-existence of the sentient 'I' and the material 'Body'
8. Understanding the needs of Self ('I') and 'Body' - happiness and physical facility
9. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)
10. Understanding the characteristics and activities of 'I' and harmony in 'I'
11. Understanding the harmony of I with the Body: Sanyam and Health; correct appraisal of Physical needs, meaning of Prosperity in detail
12. Programs to ensure Sanyam and Health.

Include practice sessions to discuss the role others have played in making material goods available to me. Identifying from one's own life. Differentiate between prosperity and accumulation. Discuss program for ensuring health vs dealing with disease

Module 3: Understanding Harmony in the Family and Society- Harmony in Human-HumanRelationship

13. Understanding values in human-human relationship; meaning of Justice (nine universal values in relationships) and program for its fulfilment to ensure mutual happiness; Trust and Respect as the foundational values of relationship
14. Understanding the meaning of Trust; Difference between intention and competence
15. Understanding the meaning of Respect, Difference between respect and differentiation; the othersalient values in relationship
16. Understanding the harmony in the society (society being an extension of family): Resolution,Prosperity, fearlessness (trust) and co-existence as comprehensive Human Goals
17. Visualizing a universal harmonious order in society- Undivided Society, Universal Order- fromfamily to world family.

Include practice sessions to reflect on relationships in family, hostel and institute as extended family, real life examples, teacher-student relationship, goal of education etc. Gratitude as a universal value in relationships. Discuss with scenarios. Elicit examples from students' lives

Module 4: Understanding Harmony in the Nature and Existence - Whole existence as Coexistence

18. Understanding the harmony in the Nature
19. Interconnectedness and mutual fulfilment among the four orders of nature- recyclability and self-regulation in nature
20. Understanding Existence as Co-existence of mutually interacting units in all-pervasive space
21. Holistic perception of harmony at all levels of existence.

Include practice sessions to discuss human being as cause of imbalance in nature (film "Home" canbe used), pollution, depletion of resources and role of technology etc.

Module 5: Implications of the above Holistic Understanding of Harmony on ProfessionalEthics

22. Natural acceptance of human values
23. Definitiveness of Ethical Human Conduct
24. Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order
25. Competence in professional ethics: a. Ability to utilize the professional competence for augmenting universal human order b. Ability to identify the scope and characteristics of people- friendly and eco-friendly production systems, c. Ability to identify and develop appropriate technologies and management patterns for above production systems.
26. Case studies of typical holistic technologies, management models and production systems
27. Strategy for transition from the present state to Universal Human Order: a. At the level of individual: as socially and ecologically responsible engineers, technologists and managers b. At the level of society: as mutually enriching institutions and organizations
28. Sum up.

Include practice Exercises and Case Studies will be taken up in Practice (tutorial) Sessions eg. to discuss the conduct as an engineer or scientist etc.

READINGS:

Text Book

1. Human Values and Professional Ethics by R R Gaur, R Sangal, G P Bagaria, Excel Books,New Delhi, 2010

Reference Books

1. Jeevan Vidya: Ek Parichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak, 1999.
2. Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.
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4. The Story of My Experiments with Truth - by Mohandas Karamchand Gandhi
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11. India Wins Freedom - Maulana Abdul Kalam Azad
12. Vivekananda - Romain Rolland (English)
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MODE OF CONDUCT

Lecture hours are to be used for lecture/practice sessions.

Lectures hours are to be used for interactive discussion, placing the proposals about the topics at hand and motivating students to reflect, explore and verify them.

Practice hours are to be used for practice sessions.

While analysing and discussing the topic, the faculty mentor's role is in pointing to essential elementsto help in sorting them out from the surface elements. In other words, help the students explore the important or critical elements.

In the discussions, particularly during practice sessions, the mentor encourages the student to connect with one's own self and do self-observation, self-reflection and self-exploration. Scenariosmay be used to initiate discussion. The student is encouraged to take up" ordinary" situations rather than" extra-ordinary" situations. Such observations and their analyses are shared and discussed with other students and faculty mentor, in a group sitting.

Practice experiments are important for the course. The difference is that the laboratory is everyday life, and practical are how you behave and work in real life. Depending on the nature of topics, worksheets, home assignment and/or activity are included. The practice sessions would also provide support to a student in performing actions commensurate to his/her beliefs. It is intended that this would lead to development of commitment, namely behaving and working based onbasic human values.

It is recommended that this content be placed before the student as it is, in the form of a basic foundation course, without including anything else or excluding any part of this content. Additional content may be offered in separate, higher courses.

This course is to be taught by faculty from every teaching department, including HSS faculty. Teacher preparation with a minimum exposure to at least one 8-day FDP on Universal Human Values is deemed essential.

ASSESSMENT:

This is a compulsory credit course. The assessment is to provide a fair state of development of the student, so participation in classroom discussions, self-assessment, peer assessment etc. will be used in evaluation.

Example:

Assessment by

faculty mentor: 5 marks

Self-assessment: 5 marks

Assessment by peers: 5 marks

Socially relevant project/Group Activities/Assignments: 10 marks

Semester End Examination: 75 marks

The overall pass percentage is 40%. In case the student fails, he/she must repeat the course.

Bachelor of Technology (Computer Science and Engineering)Credit Based Scheme of Studies/Examination

Semester IV (w.e.f Session 2021-2022)

S. No.	Course No.	Subject	L:T:P	Hours/ Week	Credits	Examination Schedule (Marks)				Duration of Exam (Hrs)
						Major Test	Minor Test	Practical	Total	
1	PC-CS-202	Discrete Mathematics	3:0:0	3	3	75	25	0	100	3
2	PC-CS-204	Internet Technology and Management	3:0:0	3	3	75	25	0	100	3
3	PC-CS-206	Operating Systems	3:0:0	3	3	75	25	0	100	3
4	PC-CS-208	Design and Analysis of Algorithms	3:0:0	3	3	75	25	0	100	3
5	HTM-901	Universal Human Values II : Understanding Harmony	3:0:0	3	3	75	25	0	100	3
6	PC-CS-210L	Internet Technology and Management Lab	0:0:4	4	2	0	40	60	100	3
7	PC-CS-212L	Operating Systems Lab	0:0:4	4	2	0	40	60	100	3
8	PC-CS-214L	Design and Analysis of Algorithms Lab	0:0:4	4	2	0	40	60	100	3
		Total		**27**	**21**	**375**	**245**	**180**	**800**	

9	MC-901 *	Environmental Sciences	3:0:0	3	0	75	25	0	100	3

***MC-901 is a mandatory credit-less course and student has to get passing marks in order to qualify for theaward of B.Tech. Degree.**

HTM-901	Universal Human Values II: Understanding Harmony						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
3	**0**	**0**	**3.0**	**75**	**25**	**100**	**3 Hours**
Purpose	Purpose and motivation for the course, recapitulation from Universal Human Values-I						
Course Outcomes (CO)							
CO 1	Development of a holistic perspective based on self-exploration about themselves (human being),family, society and nature/existence.						
CO 2	Understanding (or developing clarity) of the harmony in the human being, family, society and nature/existence.						
CO 3	Strengthening of self-reflection.						
CO 4	Development of commitment and courage to act.						

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Bachelor of Technology (Computer Science & Engineering)										
Credit-Based Scheme of Studies/Examination										
Semester V (w.e.f. session 2020-2021)										
S. No.	**Course Code**	**Subject**	**L:T:P**	**Hours/ Week**	**Credits**	**Examination Schedule (Marks)**				**Duration of Exam (Hrs)**
						Major Test	**Minor Test**	**Practical**	**Total**	
1	ES-301	Microprocessor & Interfacing	3:0:0	3	3	75	25	0	100	3
2	PC-CS-301	Database Management Systems	3:0:0	3	3	75	25	0	100	3
3	PC-CS-303	Formal Language & Automata Theory	3:0:0	3	3	75	25	0	100	3
4	PC-CS-305	Essential of Information Technology	3:0:0	3	3	75	25	0	100	3
5	PC-CS-307	Computer Organization & Architecture	2:0:0	2	2	75	25	0	100	3
6	PEC	Elective-I	3:0:0	3	3	75	25	0	100	3
7	PC-CS-309L	Database Management Systems Lab	0:0:4	4	2	0	40	60	100	3
8	PC-CS-311L	Essential of Information Technology Lab	0:0:4	4	2	0	40	60	100	3
		Total		**25**	**21**	**450**	**230**	**120**	**800**	
9	MC-904	Energy Resources & Management	3:0:0	3	0	75	25	0	100	3
10	SIM-301*	Seminar on Summer Internship	2:0:0	2	0	0	50	0	50	

PEC Elective-I
Digital Data Communication: PE-CS-T301
Parallel and Distributed Computing: PE-CS-T303
Information Theory and Coding: PE-CS-T305
Advanced Algorithms: PE-CS-T307

***Note:** SIM-301* is a mandatory credit-less course in which the students will be evaluated for the Summer Internship undergone after 4th semester and students will be required to get passing marks to qualify.

MC-904	ENERGY RESOURCES & MANAGEMENT						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
3	**-**	**-**	**0**	**75**	**25**	**100**	**3**
Purpose	To make the students conversant with the basics concepts and conversion of various form of Energy						
COURSE OUTCOMES							
CO1	An overview about Energy Resources, Conventional and Non-conventional sources						
CO2	Understand the Layout and working of Conventional Power Plants						
CO3	Understand the Layout and working of Non-Conventional Power Plants						
CO4	To understand the Energy Management, Audit and tariffs, Role of Energy in Economic development and Energy Scenario in India						

UNIT-I

Introduction: Types of energy, Conversion of various forms of energy, Conventional and Non-conventional sources, Need for Non-Conventional Energy based power generation.

UNIT-II

Conventional Energy sources: Types of Conventional Energy sources, Selection of site**,** working of Thermal, Hydro, Nuclear and Diesel power plants and their schematic diagrams & their comparative advantages/ disadvantages.

UNIT-III

Non-Conventional Energy sources: Types of Non-Conventional Energy sources , Basic principle, site selection of Solar energy power plant, photovoltaic technologies, PV Systems and their components, Wind energy power plant , Bio energy plants ,Geothermal energy plants and Tidal energy plants.

UNIT-IV

Energy Management: General Principles of Energy Management, Energy Management Strategy, Modern trends and developments towards Computerizations of Power System.

Energy Audit: Need, Types, Methodology and Approach.

Energy Scenario: Lay out of power system, Role of Energy in Economic development, energy demand, availability and consumption, Indian energy scenario, long term energy scenario, energy sector reforms in India, energy strategy for the future.

References:

1. Energy Studies-Wiley Dream Tech India.
2. Non-conventional energy resources- Shobhnath Singh, Pearson.
3. Electrical Power Systems : Soni, Gupta, Bhatnagar – Dhanpat Rai & Sons
4. NEDCAP: Non Conventional Energy Guide Lines
5. Non conventional energy sources : G.D. Roy
6. Non Conventional energy resources :B H Khan - McGraw Hill
7. Applied Solar Energy : Meinel A B - Addison Wesley Publications
8. Direct Energy Conversion George: Sutton -McGraw

Bachelor of Technology (Computer Science & Engineering)										
Credit-Based Scheme of Studies/Examination										
Semester VII (w.e.f. session 2021-2022)										
S. No.	**Course Code**	**Subject**	**L:T:P**	**Hours/Week**	**Credits**	**Examination Schedule (Marks)**				**Duration of Exam (Hrs)**
						Major Test	**Minor Test**	**Practical**	**Total**	
1	PE	Elective-IV	3:0:0	3	3	75	25	0	100	3
2	PE	Elective-V	3:0:0	3	3	75	25	0	100	3
3	OE	Open Elective-II	3:0:0	3	3	75	25	0	100	3
4	PROJ-CS-401	Project-II	0:0:12	12	6	0	40	60	100	3
5	PE-L	Elective-IV Lab	0:0:2	2	1	0	40	60	100	3
6	PE-L	Elective-V Lab	0:0:2	2	1	0	40	60	100	3
Total				**21**	**17**	**225**	**115**	**60**	**400**	
7	SIM-401*	Seminar on Summer Internship	2:0:0	2	0	0	50	0	50	

PE Elective-IV	**PE Elective-V**
Data Mining: PE-CS-D401	Soft Computing: PE-CS-D407
Software Verification and Validation and Testing:: PE-CS-D403	Neural Networks and Deep Learning: PE-CS-D409
Information Retrieval: PE-CS-D405	Object Oriented Software Engineering: PE-CS-D411
	Expert Systems: PE-CS-D413

OE Elective-II
Cyber Law and Ethics: OE-CS-401
Bioinformatics: OE-CS-403
Fiber Optic Communications: OE-CS-405
Industrial Electrical Systems: OE-CS-407

The course of both PE & OE will be offered at 1/3rd strength or 20 students (whichever is smaller) of the section.

***Note:** SIM-401* is a mandatory credit-less course in which the students will be evaluated for Summer Internship undergone after 6th semester and students will be required to get passing marks to qualify.

PE-CS-D401	Data Mining						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
3	0	0	3	75	25	100	3
Purpose	Data mining techniques discover the knowledge intelligently by extracting the desired patterns from data warehouses or web repositories data streams.						
Course Outcomes (CO)							
CO1	Learn about various Data Mining concepts						
CO2	Apply Frequent Itemsets Associations Rules to discover the knowledge						
CO3	Analyze the desired information using Classification Methods						
CO4	Evaluating knowledge from specific data sources using data mining trends						

Unit I: Basics of Data Mining

Need for data mining, Data Mining as the Evolution of Information Technology, Data mining as a step in the process of knowledge discovery, Transactional Database, Major issues in data mining, Data Preprocessing, Data cleaning, Data integration, Data reduction, Data transformation, Data Warehousing and Online Analytical Processing (OLAP).

Unit II: Mining Frequent Itemsets with Associations and Correlations

Data cube technology, Multidimensional data mining, Multidimensional data analysis, Mining Frequent Patterns, Associations, and Correlations : Basic Concepts and Methods, Market Basket Analysis Example with rule of Support and Confidence, Frequent Itemsets, Closed Itemsets, and association Rules, Frequent Itemset Mining Methods – Apriori Algorithm.

Unit III: Classification Methods and Cluster Analysis

Advanced pattern mining, Mining multilevel patterns, multidimensional patterns, Classification : Basic Concepts, Decision Tree Induction, Naïve Bayesian Classification Methods, Rule-Based Classification, Cluster Analysis : Basic Concepts and Methods, Partitioning Methods, Hierarchical Methods, Density-Based Methods, Grid-Based Methods.

Unit IV: Data Mining Trends

Mining Spatial Data, Mining Spatiotemporal Data, Mining Multimedia Data, Mining Text Data, Mining Web Data, Statistical Data Mining, Data Mining Applications – Data Mining for Financial Data Analysis, Intrusion Detection and Prevention, Retail and Telecommunication Industries, Science and Engineering, Privacy, Security and Social Impacts of Data Mining, Data Mining Trends.

Text Books:

1. "Data Mining" Concepts and Techniques by Jiawei Han, Micheline Kamber and Jian Pei, 3rd.
   Edition Elsevier Morgan Kaufmann Series USA 2012, ISBN 978-0-12-381479-1
2. "Datawarehousing: Concepts, Techniques, Products and Applications", by C.S.R. Prabhu PHI
3. "Data Mining with Microsoft SQL Server", by Seidman, Prentice Hall of India.

PE-CS-D403	Software Verification and Validation and Testing						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
3	0	0	3	75	25	100	3
Program Objective (PO)	**The objective of this course is to provide the in-depth coverage of software quality models and software testing strategies. It focuses on test case generation techniques and testing levels. It also focuses on testing different kinds of software.**						
Course Outcomes (CO)							
CO1	To develop test cases for any problem						
CO2	To pursue testing on any level of software design by using different testing strategies						
CO3	To learn the test management and testing activities by using different testing methods.						
CO4	To apply testing and quality model of software testing in achieving high-quality software.						

UNIT – I

Introduction: Overview of software evolution, SDLC, Testing Process, Terminologies in Testing: Error, Fault, Failure, Verification, Validation, Definition of software testing, Test Cases, Test Oracles, Testing Process, Limitations of Testing.

UNIT - II

Functional Testing: Boundary Value Analysis, Equivalence Class Testing, Decision Table Based Testing, Cause Effect Graphing Technique.

Structural Testing: Path testing, DD-Paths, Cyclomatic Complexity, Graph Metrics, Data Flow Testing, Mutation testing.

UNIT - III

Reducing the number of test cases: Prioritization guidelines, Priority category, Scheme, Risk Analysis, Regression Testing, and Slice based testing

Testing Activities: Unit Testing, Levels of Testing, Integration Testing, System Testing, Debugging, Domain Testing.

UNIT - IV

Overview of SQM: Concepts of Software Quality, Quality Attributes, Software Quality Models: McCall, Boehm, ISO-9000, CMM.

Miscellaneous topics: Stress Testing, Ad hoc testing: Buddy testing, Exploratory testing, Agile and extreme testing.

Suggested Books:

1. Naresh Chauhan "Software Testing Principles and Practices" Oxford Publications, 2012
2. Louise Tamres, "Software Testing", Pearson Education Asia, 2002
3. Robert V. Binder, "Testing Object-Oriented Systems-Models, Patterns and Tools", Addison Wesley.
4. William Perry, "Effective Methods for Software Testing", John Wiley & Sons, New York.
5. Cem Kaner, Jack Falk, Nguyen Quoc, "Testing Computer Software", Second Edition, Van Nostrand Reinhold, New York.
6. K.K. Aggarwal & Yogesh Singh, "Software Engineering", 2nd Ed., New Age International Publishers, New Delhi, 2005
7. Boris Beizer, "Software Testing Techniques", Second Volume, Second Edition, Van Nostrand Reinhold, New York.

PE-CS-D405	Information Retrieval						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
3	**0**	**0**	3	75	25	100	**3 Hour**
Purpose	To provide an overview of Information Retrieval and implementation insight about various evaluation methods.						
Course Outcomes							
CO 1	To make understanding about different Information retrieval model.						
CO 2	To understand the experimental evaluation of performance metrics.						
CO 3	To gain knowledge about various web search engines.						
CO 4	To understand the application of appropriate text classification and clustering.						

Unit I

Introduction: Goals and history of IR. The impact of the web on IR. The role of artificial intelligence (AI) in IR. Basic IR Models: Boolean and vector-space retrieval models; ranked retrieval; text-similarity metrics; TF-IDF (term frequency/inverse document frequency) weighting; cosine similarity.

Basic Tokenizing Indexing, and Implementation of Vector-Space Retrieval: Simple tokenizing, stop-word removal, and stemming; inverted indices; efficient processing with sparse vectors; python implementation.

UNIT-II

Experimental Evaluation of IR: Performance metrics: recall, precision, and F-measure; Evaluations on benchmark text collections.

Query Operations and Languages: Relevance feedback; Query expansion; Query languages.

UNIT-III

Text Representation: Word statistics; Zipf's law; Porter stemmer; morphology; index term selection; using thesauri. Metadata and markup languages (SGML, HTML, XML).

Web Search: Search engines; spidering ; metacrawlers; directed spidering; link analysis (e.g. hubs and authorities, Google PageRank); shopping agents.

UNIT-IV

Text Categorization and Clustering: Categorization algorithms: naive Bayes; decision trees; and nearest neighbor. Clustering algorithms: agglomerative clustering; k-means; expectation maximization (EM). Applications to information filtering; organization; and relevance feedback.

Recommender Systems: Collaborative filtering and content-based recommendation of documents and products

Suggested Books:

1. Introduction to Information Retrieval Manning, Raghavan and Schutze, Cambridge University Press, 2008.
2. R. Baeza-Yates and B. Ribeiro Neto,“Modern Information Retrieval: The Concepts and Technology behind Search”, Second Edition, Addison Wesley, 2011.
3. David A. Grossman and Ophir Frieder “Information Retrieval: Algorithms and Heuristics”, Second Edition, Springer 2004.
4. Mining the Web, Soumen Charabarti, Morgan-Kaufmann, 2002.
5. Ricci, F, Rokach, L. Shapira, B.Kantor, Recommender Systems Handbook, First Edition, 2011.

PE-CS-D407	Soft Computing						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
3	0	0	3	75	25	100	3
Purpose	Soft Computing deals with imprecision, uncertainty, partial truth, approximation to achieve practicability, robustness, and low cost solution for complex problems in real world using neural networks, fuzzy systems, evolutionary computation with optimization approaches to design intelligent systems.						
Course Outcomes (CO)							
CO1	Learn about various supervised and unsupervised Artificial Neural Networks.						
CO2	Apply the concepts of Fuzzy Logic for decision making in Fuzzy based Systems						
CO3	Analyze Nature-Inspired Algorithms like Genetic, Differential Evolution, PSO, ABC.						
CO4	Evaluate the values of new ideas by creating a new solution using Optimization.						

Unit I: Artificial Neural Networks

Fundamentals of Biological Neural Network and Artificial Neural Network, Evolution of Neural Networks, Learning – supervised, unsupervised and reinforcement, Terminologies – weights, bias, threshold, learning rate, Hebb Network, Perceptron Networks, Backpropagation Network, Associative Memory Network, Hopfield Networks, Counter propagation Networks, Adaptive Resonance Theory Network, Optical Neural Networks, Applications of Neural Networks.

Unit II: Fuzzy Systems

Introduction to Fuzzy Logic, Classical Sets and Fuzzy Sets, Operations on Crisp Sets and Fuzzy Sets, Classical Relation and Fuzzy Relations, Membership Functions, Methods of Membership Value Assignments, Fuzzy Arithmetic and Fuzzy Measures, Fuzzy Rule Base and Approximate Reasoning, Fuzzy Decision Making, Fuzzy Logic Control Systems, Applications of Fuzzy Logic based systems.

Unit III: Nature-Inspired Algorithms

Introduction to Nature-Inspired algorithms, Swarm Intelligence, Genetic Algorithm (GA), Operators in Genetic Algorithm – Encoding, Selection, Crossover, Mutation, Stopping Condition for GA, Differential Evolution (DE) Algorithm, Particle Swarm Optimization (PSO) Algorithm, Ant Bee Colony (ABC) Algorithm, Flower Pollination Algorithm, Solution of Real World Problems using Nature-Inspired Algorithms.

Unit IV: Optimization

Objective of Optimization, Single-objective Optimization, Multi-objective Optimization, Pareto-optimal solutions, Travelling Salesman Problem solution using any optimization technique, Engineering problems solution using any Soft Computing approach, Architecture of Neuro-Fuzzy Systems and Genetic Neuro-Fuzzy Hybrid Systems, Applications of Soft Computing.

Text Books:

4. "Principle of Soft Computing" by Dr. S.N. Sivanandam and Dr. S.N Deepa, 2nd. Edition
   Wiley India 2012, ISBN: 978-81-265-2741-0

5. “Soft Computing” Fundamentals, Techniques and Applications by Dr. Saroj Kaushik and Dr. Sunita Tiwari, McGraw Hill Education 2018, ISBN: 10:93-5316-066-9
6. “Neuro-Fuzzy and Soft Computing” A Computational Approach to Learning and Machine Intelligence by Jyh-Shing Roger Jang, Chuen-Tsai Sun and Eiji Mizutani Pearson 2018, ISBN: 978-93-325-4988-3
7. “Neural Networks, Fuzzy Logic and Genetic Algorithms” Synthesis and Applications by S. Rajasekaran and G.A Vijayalakshmi Pai PHI 2012, ISBN: 978-81-203-2186-1
8. “Nature-Inspired Optimization Algorithms” Xin-She Yang Elsevier USA 2014, ISBN: 978-0-12-416743-8

PE-CS-D409	Neural Networks and Deep Learning						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
3	0	0	3	75	25	100	3
Purpose	Neural network solves complex problems that require analytical calculations similar to those of the human brain. Deep learning is an artificial intelligence (AI) function that imitates human brain in processing data and creating patterns for decision making.						
Course Outcomes (CO)							
CO1	Learn about various concepts related to Neural Networks and Deep Learning.						
CO2	Understand about various supervised and unsupervised neural networks.						
CO3	Explore the knowledge about advanced types of Neural Networks.						
CO4	Apply biologically-inspired deep learning for expert systems in AI.						

Unit I: Artificial Neural Networks

Human Brain, Model of an artificial Neuron, Basic concepts of Neural Networks, Fundamentals of Biological Neural Network and Artificial Neural Network, Evolution of Neural Networks, Characteristics of Neural Networks, Learning Methods – supervised, unsupervised and reinforcement, Taxonomy of Neural Network Architectures, Terminologies – weights, bias, threshold, learning rate, Applications of Neural Networks.

Unit II: Supervised and Unsupervised Neural Networks

Hebb Network theory and training algorithm, Perceptron Networks architecture and training algorithm, Backpropagation Network architecture and training algorithm, Associative Memory Network architecture and training algorithm, Hopfield Networks architecture and training algorithm, Counterpropagation Networks architecture and training algorithm, Adaptive Resonance Theory Network architecture and training algorithm.

Unit III: Advanced Neural Networks

Kohonen Self-Organising Feature Maps architecture and training algorithm, Learning Vector Quantization architecture and training algorithm, Boltzmann Machine, Cognitron Network, Neocognitron Network, Optical Neural Networks Electro-optical Multipliers and Holographic Correlators.

Unit IV: Deep Learning

Machine learning basics, Simple Machine Learning Algorithm -- Linear Regression, underfitting and overfitting challenges in Machine Learning, Supervised Learning approach for Support Vector Machine, Deep Feedforward Networks, Convolutional Networks, Deep Recurrent Networks, Deep Boltzmann Machine, Applications in Speech Recognition and Natural Language Processing.

Suggested Books:

1. "Neural Networks and Deep Learning" by Michaeil Nielsen, Online Book
2. "Principle of Soft Computing" by Dr. S.N. Sivanandam and Dr. S.N Deepa, 2nd. Edition
   Wiley India 2012, ISBN: 978-81-265-2741-0
3. "Soft Computing" Fundamentals, Techniques and Applications by Dr. Saroj Kaushik and Dr. Sunita Tiwari, McGraw Hill Education 2018, ISBN: 10:93-5316-066-9
4. "Neuro-Fuzzy and Soft Computing" A Computational Approach to Learning and Machine Intelligence by Jyh-Shing Roger Jang, Chuen-Tsai Sun and Eiji Mizutani Pearson 2018, ISBN: 978-93-325-4988-3
5. "Deep Learning" by Yoshua Bengio and Aaron Courville, Online Book

PE-CS-D411	Object Oriented Software Engineering						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3 Hrs.**
Purpose	**To provide the thorough knowledge to use the concepts and their design attributes for Object Oriented Software Engineering approaches and platforms to solve real time problems.**						
	Course Outcomes (CO)						
CO1	To learn the basic concepts of object oriented systems and software engineering.						
CO2	To get exposure of various object modeling methodologies, tools for analyzing and designing software based systems using UML.						
CO3	To explore problems using Use Cases, analyzing relations, responsibilities and collaborations among classes and their behavior in problem domain.						
CO4	To evaluate object oriented design processes using models, design patterns, interfaces designs and communication mechanisms for performing required tasks.						

Unit - I

An Overview of Object-Oriented system Development, Objects Basis, Class Hierarchy, Inheritance, Polymorphism, Object Relationships and Associations, Aggregations and Object Containment, Object Persistence, Meta-Classes, Object Oriented Systems Development Life Cycle: Software Development Process, Object Oriented Systems Development: A Use-Case Driven Approach.

Unit - II

Object Oriented Methodologies: Rumbaugh Methodology, Jacobson Methodology, Booch Methodology, Patterns, Frameworks, The Unified approach, Unified Modeling Language (UML)

Unit - III

Object Oriented Analysis Process, Use Case Driven Object Oriented Analysis, Use Case Model, Object Analysis: Classification, Classification Theory, Approaches for identifying classes, Responsibilities and Collaborators, Identifying Object Relationships, Attributes and Methods: Associations, Super-Sub Class relationships, A-Part-of-Relationships-Aggregation, Class Responsibilities, Object Responsibilities.

Unit - IV

Object Oriented Design process and Design Axioms, Corollaries, Design Patterns, Designing Classes: Object Oriented Design Philosophy, UML Object Constraint Language, Designing Classes: The Process, Class Visibility, Refining Attributes, Designing Methods and Protocols, Packages and Managing classes, View Layer: Designing Interface objects, Designing View layer Classes, Macro and Micro Level Interface Design Process.

Suggested Books:

1. Ali Bahrami, Object Oriented Systems Development, McGraw HillPublishing Company Limited, New Delhi, 2013.
2. Rumbaugh *et al.*, Object Oriented Modeling and Design, PHI, 2006.
3. Robert Laganière and Timothy C. Lethbridge, Object-Oriented Software Engineering: Practical Software Development, McGraw-Hill Publishing Company Limited, New Delhi, Sixth Print 2008.
4. Ivar Jacobson, MagnosChristerson, Patrick Jonsson, Gunnar Overgaard, Object-oriented Software Engineering: A Use Case Driven Approach, Pearson Education, New Delhi, Seventh Edition Reprint, 2009.
5. Bernd Bruegge, Allen H. Dutoit, Object-Oriented Software Engineering Using UML, Patterns, and Java: Pearson New International, Third Edition, 2013.

PE-CS-D413	Expert Systems						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3 Hrs.**
Purpose	In this course the student will learn the methodologies used to transfer the knowledge of a human expert into an intelligent program that can be used to solve real-time problems.						
Course Outcomes(CO)							
CO1	Examining the fundamentals and terminologies of expert system.						
CO2	To facilitate students to implement various knowledge representation techniques for acquisition and validate various structures in experts system domain.						
CO3	Signifying AI techniques to solve social, industrial and environmental problems.						
CO4	Design and implement expert systems for real life problem						

UNIT I

Introduction to Expert System Features of expert system, Representation and organization of knowledge, Basic characteristics, Types of problems handled by expert systems, Case study of PROSPECTOR.

UNIT II

Expert System Tools Techniques of knowledge representation in expert systems, knowledge engineering, System-building aids, support facilities, stages in the development of expert systems.

UNIT III

Building an Expert System Expert system development, Selection of tool, Acquiring knowledge, Building process

UNIT IV

Problems with Expert Systems Difficulties, common pitfalls in planning, Dealing with domain expert, Difficulties during development.

Suggested Books

1.Waterman D.A.: A Guide to Expert Systems, Addison Wesley Longman
2.Hayes-Roth, Lenat and Waterman: Building Expert Systems, Addison Wesley
3.Weiss S.M. and Kulikowski C.A.: A Practical Guide to Designing Expert Systems, Rowman & Allanheld, New Jersey

OE-CS-401	Cyber Law and Ethics						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
3	**-**	**-**	**3**	**75**	**25**	**100**	**3 Hrs.**
Purpose	To gain a broad understanding in order to get cyber law and ethics.						
Course Outcomes							
CO1	To facilitate the basic knowledge of cyber Law.						
CO2	To learn about how to maintain the Confidentiality, Integrity and Availability of information technology act.						
CO3	To get enable to fix the various Cyber Law and Related Legislation.						
CO4	To deal with the Cyber Ethics.						

Unit-1: Introduction to Cyber Law

Evolution of computer technology, emergence of cyber space. Cyber Jurisprudence, Jurisprudence and law, Doctrinal approach, Consensual approach, Real Approach, Cyber Ethics, Cyber Jurisdiction, Hierarchy of courts, Civil and criminal jurisdictions, Cyberspace-Web space, Web hosting and web Development agreement, Legal and Technological Significance of domain Names, Internet as a tool for global access.

Unit-2: Information Technology Act

Overview of IT Act, 2000, Amendments and Limitations of IT Act, Digital Signatures, Cryptographic Algorithm, Public Cryptography, Private Cryptography, Electronic Governance, Legal Recognition of Electronic Records, Legal Recognition of Digital Signature, Certifying Authorities, Cyber Crime and Offences, Network Service Providers Liability, Cyber Regulations Appellate Tribunal, Penalties and Adjudication.

Unit-3: Cyber Law and Related Legislation

Patent Law, Trademark Law, Copyright, Software – Copyright or Patented, Domain Names and Copyright disputes, Electronic Data Base and its Protection, IT Act and Civil Procedure Code, IT Act and Criminal Procedural Code, Relevant Sections of Indian Evidence Act, Relevant Sections of Bankers Book Evidence Act, Relevant Sections of Indian Penal Code, Relevant Sections of Reserve Bank of India Act, Law Relating To Employees And Internet, Alternative Dispute Resolution , Online Dispute Resolution (ODR).

Unit-4: Cyber Ethics

The Importance of Cyber Law, Significance of cyber Ethics, Need for Cyber regulations and Ethics. Ethics in Information society, Introduction to Artificial Intelligence Ethics: Ethical Issues in AI and core Principles, Introduction to Block chain Ethics.

Suggested Books:

1. Cyber Security : Understanding Cyber Crimes , Computer Forensics and Legal Perspectives By Nina Godbole, Sunit Belapur , Wiley
2. Understanding cybercrime: phenomena , and legal challenges response, ITU 2012.

OE-CS-403	Bioinformatics						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3 Hrs.**
Purpose	**To familiarize the students with the basics of Bioinformatics**						
Course Outcomes							
CO1	Students will learn basic principles of various types of databases						
CO2	Students will come to know about various tools related to sequence alignment and statistical significance of alignment						
CO3	This unit will enable the students to learn various software tools for sequence analysis and primer designing						
CO4	Students will be able to learn predictive methods for nucleotides and protein sequence analysis						

UNIT I : Databases

Sequence Databases: introduction of Databases, primary and secondary databases, nucleotide and protein sequence databases: Genbank, EMBL, DDBJ, Swissprot, pfam, Block, PRI

Structure Databases: Introduction to structures. PDB (Protein Data bank) Molecular Modeling database at NCBI. , visualizing structural information, database structure viewers. Sequence and Structure File Formats; **The Entrez system**: Integrated information axis, Information retrieval from biological database, sequence database beyond NCBI. Medical databases.

UNIT II: Sequence Alignment AND Database Searches

Introduction, the evolutionary basis of sequence alignment, Type of Aligmnents, Pair-wise Alignment, Multiple Alignment, The modular nature of proteins, Optimal alignment methods, substitution scores and gap penalties, statistical significance of alignment. FASTA, BLAST, low-complexity regions, repetitive elements, Tool of multiple sequence alignment: CLUSTAL W/X, progressive alignment method.

Phylogenetic Analysis: Elements of phylogenetic models, phylogenetic data analysis: alignment, substitution model building, tree building and tree evaluation, building the data model (alignment), determining the substitution model, tree- building methods, searching for trees, rooting trees, evaluation trees and data, phylogenic software (PHYLIP). phylogenetics online tool.

UNIT III: Sequence Analysis Using Software Resources :

Introduction. The Wisconsin package, the Seq Lab environment, analyzing sequences with operations and Wisconsin package programmes, viewing output, monitoring programme progress and troubleshooting problems, annotating sequences and graphically displaying annotations in the Seqlab Editor, saving sequences in the Seq Lab Editor, Example of analysis that can be undertaken in Seqlab, extending Seqlab by including programmes that are not part of the Wiscosin package.

Unit-IV : Plasmid Mapping And Primer Design

Restriction mapping, Mac Vector and OMIGA. Gene construction kit. Vector NTI, primer design for PCR Sequencing, primer design programs and software.

Suggested Books-

1. Bioinformatics by Andreas D.Boxevanis. Wiley Interscience, 4th edition 2020.
2. Bioinformatics: Sequence and genome analysis by David W.Mount, Cold Spring Harbor, 2004.
3. Biocomputing Informatics And The Genome Projects by Smith D.W., Academic Press, 2014.
4. Bioinformatics: A Biologists Guide to Computing and the Internet. by Stuart M. Brown, NKU Medical Center, NY USA, 2000.

OE-CS-405	Fiber Optic Communications						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
3	0	0	3	75	25	100	3
Purpose	**To familiarize the students with the concepts of Optical communication covering the contents of optical fibers, losses in fibers, optical sources, detectors etc.**						
	Course Outcomes (CO)						
CO1	Students will be able to understand the structure of fiber and the mechanism of light travelling in the fiber.						
CO2	Students will be able to analyze various losses associated with fibers.						
CO3	Students will learn about the optical sources and optical detecters.						
CO4	Students will be able to understand the various components and devices required in making optical networks						

UNIT – I

INTRODUCTION : Optical Fibers: Structure, Propagation within the fiber, Numerical aperture of fiber, acceptance angle, step index and graded index fiber, Modes of propagation in the fiber, Single mode and multi mode fibers. Splices and connectors. Optical Power Launching and Coupling. Fiber-to-fiber joints.

UNIT –II

LOSSES IN OPTICAL FIBER : Attenuation, Absorption Losses, Scattering Losses, Leaky modes, Mode coupling losses, Bending Losses, Combined Losses in the fiber.

DISPERSION EFFECT : Effect of dispersion on the pulse transmission Intermodal dispersion, Material dispersion, Wave guide dispersion, Polarization Mode Dispersion, Total dispersion, Transmission rate. Dispersion Shifted Fibers, Dispersion Compensating Fibers.

UNIT – III

LIGHT SOURCES : LEDS, Laser Action in semiconductor Lasers, Semiconductor Lasers for optical communication – Laser modes, Spectral Characteristics, Power Voltage Characteristics, Frequency response.

DETECTORS : P-I-N Photodiode, APD, Noise Analysis in detectors, Coherent and non-coherent detection, Infrared sensors. Bit error rate.

UNIT – IV

The fiber-optic Communication System: Design considerations of fiber optic systems: Analog and digital modulation. Optical Devices: Optical coupler, space switches, linear divider-combiners, WDM: strategy, wavelength division multiplexer and demultiplexer, optical amplifier

OPTICAL NETWORKS: Elements and Architecture of Fiber-Optic Network, Optical link network-single hop, multihop, hybrid and photonic networks.

Suggested Books:

1. John Power, An Introduction to Fiber optic systems, McGraw Hill International.
2. John Gowar , Optical communication Systems.
3. R. Ramaswamy, Optical Networks, Narosa Publication
4. John M. Senior,Optical Fiber Communication
5. Gerd Keiser, Optical Fiber Communication

OE-CS-407	Industrial Electrical Systems						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
3	**0**	**0**		**75**	**25**	**100**	**3**
Purpose	**To provide the conceptual knowledge of various Industrial Electrical Systems.**						
Course Outcomes							
CO 1	To study various fundamental concepts of Electrical Components.						
CO 2	To study and understand the Residential and Commercial Electrical Systems						
CO 3	To study the functions and selection of Industrial Electrical Components						
CO 4	To study the basics and role of PLC & SCADA in automation						

UNIT-1

Electrical System Components

LT system wiring components, selection of cables, wires, switches, distribution box, metering system, Tariff structure, protection components- Fuse, MCB, MCCB, ELCB, inverse current characteristics, Relays, MPCB, Electric shock and Electrical safety Practices.

UNIT-11

Residential and Commercial Electrical Systems

Types of residential and commercial wiring systems, general rules and guidelines for installation, load calculation and sizing of wire, rating of main switch, protection devices, requirements of commercial installation, earthing of commercial installation, selection and sizing of components.

UNIT-I11

Industrial Electrical Systems

HT connection, industrial substation, Transformer selection, Power factor correction–kVAR calculations, type of compensation, Introduction to PCC, MCC panels. Specifications of LT Breakers

DG Systems, UPS System, Battery banks, Sizing the DG, UPS and Battery Banks, Selection of UPS and Battery Banks.

UNIT-1V

Industrial Electrical System Automation

Study of basic PLC, Role of automation, advantages of process automation, PLC based control system design, Panel Metering and Introduction to SCADA system for distribution automation

Suggested Books

1. S. L. Uppal and G. C. Garg, “Electrical Wiring, Estimating &Costing”, Khanna publishers, 2008.
2. K. B. Raina, “Electrical Design, Estimating & Costing”, New age International, 2007.
3. S. Singh and R. D. Singh, “Electrical estimating and costing”, Dhanpat Rai and Co., 1997. Web site for IS Standards.
4. H. Joshi, “Residential Commercial and Industrial Systems”, McGraw Hill Education, 2008

PE-CS-D401L	Data Mining Lab						
Lecture	**Tutorial**	**Practical**	**Credit**	**Minor Test**	**Practical**	**Total**	**Time**
0	**0**	**2**	**1**	**40**	**60**	**100**	**3hrs**
Purpose	Learning of data mining tools and extracting knowledge by applying various data mining techniques. Also explore the different validation techniques on the given training data set to get output metrics.						
Course Outcomes(CO)							
CO1	Learning of Data Mining tools.						
CO2	Understanding of various Data Mining Algorithms.						
CO3	Developing the application for association mining, classification and clustering.						
CO4	Providing solutions for real world problems using various data mining techniques.						

List of Practicals

1. Study of WEKA data mining tool.
2. Study of ORANGE and KNIME open source data mining tools.
3. Develop an application to identify underlying relations between different items by extracting association rule mining.
4. Develop an application for distinguishing the data classes using classification technique.
5. Develop an application for partitioning a set of data objects using clustering technique.
6. Develop an application by implementing Naive Bayes Classifier.
7. Develop an application by implementing Association Mining Rule based Apriori Algorithm.
8. Develop an application for Decision Tree from class-labeled training tuples.
9. Develop a Decision Tree from a given training data set.
10. Develop a Decision Tree with cross validation training data set.
11. Develop a Decision Tree by using prune method and reduced error pruning. Also show the accuracy for cross validation trained data set.

PE-CS-D403L	Software Verification and Validation and Testing Lab						
Lecture	**Tutorial**	**Practical**	**Credit**	**Minor Test**	**Practical**	**Total**	**Time**
0	**0**	**2**	**1**	**40**	**60**	**100**	**3hrs**
Purpose	To gain a broad understanding of the discipline of software engineering implementation.						
Course Outcomes(CO)							
CO1	To understand the basic concepts of Software Engineering.						
CO2	To understand the different design techniques.						
CO3	To understand different software development models.						
CO4	To understand different types of Testing.						

List of Practicals

1. To identify the role of the software in today's world across a few significant domains related to day to day life.
2. To identify any scenario and identify suitable software development model for the given scenario.
3. To classify the requirement into functional and non-functional requirements and list four functional and non functional requirements for any scenario.
4. Do comparative study of various software development models.
5. Preparation of requirement document for standard application problems in standard format.(e.g Library Management System, Railway Reservation system, Hospital management System, University Admission system)
6. To identify the usage of Regression Testing.
7. To identify the usage of Agile Testing.
8. To understand the importance of SDLC and STLC process.

PE-CS-D405L	Information Retrieval Lab						
Lecture	**Tutorial**	**Practical**	**Credit**	**Minor Test**	**Practical**	**Total**	**Time**
0	**0**	**2**	**1**	**40**	**60**	**100**	**3hrs**
Purpose	To provide an overview of Information Retrieval and implementation insight about various evaluation methods.						
Course Outcomes(CO)							
CO1	Understanding about Information Retrieval models.						
CO2	Learn experimental evaluation of performance matrices.						
CO3	Learn implementation of web search engines.						
CO4	Learn the implementation of text clustering and classification algorithms.						

List of Practicals

1. Implementation of Simple tokenization and Stop-word removal on a document.
2. Write a program to compute similarity between two text documents.
3. Write a map reduce program to count the number of occurrence of each alphabetic character in a document. The count for each letter should be case-insensitive.
4. Write a program to parse XML text, generate web graph and compute topic specific page rank.
5. Write a program to implement Simple web crawler.
6. Implementation of Naïve Bayes algorithm.
7. Implementation of Decision tree algorithm.
8. Implementation of K-nearest neighbour algorithm.
9. Implementation of K- means algorithm.
10. Evaluate the performance matrix using any algorithm.

PE-CS-D407L	Soft Computing Lab						
Lecture	**Tutorial**	**Practical**	**Credit**	**Minor Test**	**Practical**	**Total**	**Time**
0	**0**	**2**	**1**	**40**	**60**	**100**	**3hrs**
Purpose	Soft Computing achieves practicability, robustness, and low cost solution for complex problems in real world using neural network, fuzzy systems ,optimization approaches.						
Course Outcomes(CO)							
CO1	Understand Fuzzy Concepts.						
CO2	Learn Neural Network with back propagation and without back propagation.						
CO3	Learn the operators of Genetic algorithms.						
CO4	Learn the implementation of Optimization algorithms.						

List of Practicals

1. Write a program to implement artificial neural network with back propagation.
2. Write a program to implement artificial neural network without back propagation.
3. Implementation of operations on Fuzzy Sets.
3. Implement Travelling Sales man problem with genetic algorithm..
4. Implement Crisp partitions for real life iris dataset.
5. Write a program to implement Logic gates.
6. Implement SVM classification of Fuzzy Concepts.
7. Implement ABC (Artificial Bee Colony) optimization Technique.
8. Implement DE (Differential Evolution) algorithm.

PE-CS-D409L	Neural Networks and Deep Learning Lab						
Lecture	**Tutorial**	**Practical**	**Credit**	**Minor Test**	**Practical**	**Total**	**Time**
0	**0**	**2**	**1**	**40**	**60**	**100**	**3hrs**
Purpose	Demonstrate knowledge and apply engineering and management principles to manage projects and in multi-disciplinary environment and use research-based knowledge and research methods including design of experiments, analysis and interpretation of data for valid conclusions.						
Course Outcomes (CO)							
CO1	Apply learning algorithms on perceptron and apply back propagation learning on Neural Network.						
CO2	Apply Feedback NN and plot a Boltzmann machine and associative memory on various application.						
CO3	Apply different types of auto encoders with dimensionality reduction and regularization.						
CO4	Design Convolutional Neural Network and classification using Convolutional Neural Network.						

List of Practicals

1. To Write a program to implement Perceptron.
2. To write a program to implement AND OR gates using Perceptron.
3. To implement Crab Classification using pattern net Objective.
4. To write a program to implement Wine Classification using Back propagation.
5. Write a MatLab Script containing four functions Addition, Subtraction, Multiply and Divide functions.
6. Write a program to implement classification of linearly separable Data with a perceptron.
7. To study ImageNet, GoogleNet, ResNet convolutional Neural Networks.
8. To study Convolutional Neural Network and Recurrent Neural Network.

PE-CS-D411L	Object Oriented Software Engineering Lab						
Lecture	**Tutorial**	**Practical**	**Credit**	**Minor Test**	**Practical**	**Total**	**Time**
0	**0**	**2**	**1**	**40**	**60**	**100**	**3hrs**
Purpose	Object-Oriented Software Development is an approach/paradigm of developing software by identifying and implementing a set of objects and their interactions to meet the desired objectives. The first step towards this kind of software development is to learn and master the various concepts, tools and techniques that are to be used design and implementation of such systems.						
Course Outcomes (CO)							
CO1	To learn and understand various O-O concepts along with their applicability contexts.						
CO2	To learn various modeling techniques to model different perspectives of object-oriented software design (UML)						
CO3	To learn software development life cycle for Object-Oriented solutions for Real-World Problems.						
CO4	Learn how to test and document software.						

List of Practicals

1. Choose any one project and Write the complete problem statement.
2. Write the software requirement specification document
3. Draw the entity relationship diagram
4. Draw the data flow diagrams at level 0 and level 1
5. Draw use case diagram
6. Draw activity diagram of all use cases.
7. Draw state chart diagram of all use cases
8. Draw sequence diagram of all use cases
9. Draw collaboration diagram of all use cases
10. Assign objects in sequence diagram to classes and make class diagram.

PE-CS-D413L	Expert System Lab						
Lecture	**Tutorial**	**Practical**	**Credit**	**Minor Test**	**Practical**	**Total**	**Time**
0	**0**	**2**	**1**	**40**	**60**	**100**	**3hrs**
Purpose	In this course the student will learn different techniques of AI and Expert system that can be used to solve real-time problems.						
Course Outcomes(CO)							
CO1	Examining the fundamentals and terminologies of expert system.						
CO2	Study of various trends and issues related to AI and expert system.						
CO3	Implement general problems using AI and expert system techniques.						
CO4	Student will capable to handle real time problems related to AI and expert system.						

List of Practicals

1. Study of Prolog.
2. Write simple fact for the statements using PROLOG.
3. Write predicates One converts centigrade temperatures to
4. Write predicates One converts centigrade temperatures to Fahrenheit, the other checks if a temperature is below freezing.
5. Write a program to solve the Monkey Banana problem.
6. WAP to implement factorial, Fibonacci of a given number.
7. Write a program to solve 4-Queen problem.
8. Write a program to solve traveling salesman problem.
9. Write a program to solve water jug problem using LISP
10. Solve any problem using depth first search and best first search.

Bachelor of Technology (Computer Science & Engineering)										
Credit-Based Scheme of Studies/Examination										
Semester VIII (w.e.f. session 2021-2022)										
S. No.	**Course Code**	**Subject**	**L:T:P**	**Hours/ Week**	**Credits**	**Examination Schedule (Marks)**				**Duration of Exam (Hrs)**
						Major Test	**Minor Test**	**Practical**	**Total**	
1	PE	Elective-VI	3:0:0	3	3	75	25	0	100	3
2	OE	Open Elective-III	2:0:0	2	2	75	25	0	100	3
3	OE	Open Elective-IV	2:0:0	2	2	75	25	0	100	3
4	PROJ-CS-402	Project-III	0:0:12	12	6	0	40	60	100	3
5	PE-L	Elective-VI Lab	0:0:4	4	2	0	40	60	100	3
		Total		**23**	**15**	**225**	**155**	**120**	**500**	

The course of both PE & OE will be offered at 1/3rd strength or 20 students (whichever is smaller) of the section.

PE Elective-VI
Cloud Computing: PE-CS-A402
Computer Graphics: PE-CS-A404
Software Reliability: PE-CS-A406
Mobile Apps Development: PE-CS-A408

OE Elective-III	**OE Elective-IV**
Cyber Security: OE-CS-402	Web and Internet Technology: OE-CS-410
Satellite Communication: OE-CS-404	Automation in Manufacturing: OE-CS-412
Social Networks Analysis & Mining: OE-CS-406	IPR, Bioethics and Biosafety: OE-CS-414
Agile Software Engineering: OE-CS-408	Signal & Systems: OE-CS-416

PE-CS-A402	Cloud computing						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
3	0	0	3	75	25	100	3 hrs
Purpose	**To introduce the concepts of Cloud Computing**						
Course Outcomes (CO)							
Co1	Introduction & Overview of Computing Paradigm						
Co2	To Cloud Computing Architecture						
Co3	To study the concepts of Service Management in Cloud Computing						
Co-4	To study the concepts of Cloud Security						

Unit-I

Overview of Computing Paradigm: Recent trends in Computing, Grid Computing, Cluster Computing, Distributed Computing, Utility Computing, Cloud Computing, evolution of cloud computing, Business driver for adopting cloud computing

Introduction to Cloud Computing: Cloud Computing (NIST Model), introduction to Cloud Computing, History of Cloud Computing, Cloud service providers, Properties, Characteristics & Disadvantages, Pros and Cons of Cloud Computing, Benefits of Cloud Computing, Cloud computing vs. Cluster computing vs. Grid computing, Role of Open Standards

Unit-II

Cloud Computing Architecture: Cloud computing stack, Comparison with traditional computing architecture (client/server), Services provided at various levels, How Cloud Computing Works, Role of Networks in Cloud computing, protocols used, Role of Web services,

Service Models (XaaS) - Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS), Deployment Models- Public cloud, Private cloud, Hybrid cloud, Community cloud.Data Security, Network Security

Unit-III

Service Management in Cloud Computing: Service Level Agreements (SLAs), Billing & Accounting, comparing Scaling Hardware: Traditional vs. Cloud, Economics of scaling: Benefitting enormously, Managing Data- Looking at Data, Scalability & Cloud Services, Database & Data Stores in Cloud, Large Scale Data Processing.

Cloud Applications: Scientific Applications – Health care, Geoscience and Biology. Business and Consumer Applications- CRM and ERP, Social Networking, Media Applications and Multiplayer Online Gaming.

Case study: Eucalyptus, Microsoft Azure, Amazon EC2.

Unit-IV

Cloud Security: Infrastructure Security, Network level security, Host level security, Application level security, Data security and Storage, Data privacy and security Issues, Jurisdictional issues raised by Data location, Identity & Access Management, Access Control, Trust, Reputation, Risk, Authentication in cloud computing, Client access in cloud, Cloud contracting Model, Commercial and business considerations

Suggested books:

1. *Cloud Computing Bible,* Barrie Sosinsky, *Wiley-India,* 2010
2. *Cloud Computing: Principles and Paradigms,* Editors: Rajkumar Buyya, James Broberg, Andrzej M. Goscinski, *Wile,* 2011
3. *Cloud Computing: Principles, Systems and Applications, Editors:* Nikos Antonopoulos, Lee Gillam, *Springer,* 2012
4. *Cloud Security: A Comprehensive Guide to Secure Cloud Computing,* Ronald L. Krutz, Russell Dean Vines, *Wiley-India,* 2010

PE-CS-A404	Computer Graphics						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
3	0	0	3	75	25	100	3
Purpose	**Introduces Computer Graphics that help in designing different kinds of static and movable objects.**						
Course Outcomes(CO)							
CO1	Explore the background and standard line and circle drawing algorithms.						
CO2	Exposure of various transformation approaches and its comparative analysis.						
CO3	Illustrate Projection and clipping with different techniques.						
CO4	Apply design principles to create different curves and explore hidden lines and surface techniques.						

UNIT – I: Introduction

Computer Graphics applications, Classification, Components, Display Devices, Scan conversion-Point & Line, Line drawing algorithms: DDA, Bresenham's, Circle drawing algorithms: Bresenham's, Mid point Algorithm .

UNIT – II: Advanced Design Techniques

Window to view port transformation, Window to view port mapping, Two Dimensional transformation: translation, scaling, rotation, reflection and Shear, Homogeneous Coordinate system.

3-D transformation: Rotation, Shear, translation, Numerical Problems of transformation viewing pipeline.

UNIT – III: Graph Algorithms

Clipping: Point & Line clipping algorithm, 4-bit code algorithm, Cohen-Sutherland Line clipping algorithms, Polygon clipping: Sutherland-Hodgeman Polygon clipping algorithm. Curve clipping, Text clipping.

Projection: Parallel, Perspective, Vanishing Points.

UNIT – IV: String Matching Algorithms

Representation of 3-D Curves and Surfaces: interpolation and approximation alpines, parametric conditions, Geometric continuity conditions, Bezier curves and surfaces: properties of bezier curves, bezier surfaces.

Hidden Surfaces removal: Hidden surface elimination, depth buffer algorithm, scan line coherence and area coherence algorithm, Painter's algorithm.

Text Books:

1. Donald Hearn & M.Pauline Baker, Computer Graphics, 2nd Edition, Pearson Education.
2. William M. Newmann & Robert F. Sproull, Principles of Interactive Computer Graphics, Tata McGraw-Hill Second Edition, New Delhi, India.
3. Zhigang Xiang & Roy A Plastock , Computer Graphics, Second Edition, Schaum's Outline, Tata McGraw Hill Education Private Limited, New Delhi, India.

PE-CS-A406	Software Reliability						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
3	**0**	**0**	**3**	**75**	**25**	**100**	**3 Hrs.**
Purpose	In this course the student will understand the working of software reliability models and reliability prediction models, and able to design and develop reliability models.						
Course Outcomes(CO)							
CO1	Develop reliable software systems.						
CO2	Understand the fault handling and failure forecasting techniques in software systems.						
CO3	To learn different time dependent and time independent software reliability models and design reliability models for software systems.						
CO4	Design reliability models for software systems.						

UNIT I

Basic Ideas of Software Reliability, Hardware reliability vs. Software reliability, Reliability metrics, Failure and Faults – Prevention, Removal, Tolerance, Forecast, Dependability Concept – Failure Behaviour, Characteristics, Maintenance Policy, Reliability and Availability Modeling, Reliability Evaluation Testing methods, Limits, Starvation, Coverage, Filtering, Microscopic Model of Software Risk.

UNIT II

Computation of software reliability, Functional and Operational Profile, Operational Profiles – Difficulties, Customer Type, User Type, System Mode, Test Selection - Selecting Operations, Regression Test.

UNIT III

Classes of software reliability Models, Time Dependent Software Reliability Models: Time between failure reliability Models, Fault Counting Reliability Models. Time Independent Software Reliability Models: Fault injection model of Software Reliability, Input Domain Reliability Model, Orthogonal defect classification, Software availability Models. Software Reliability Modeling: A general procedure for reliability modeling.

UNIT IV

Short and Long Term Prediction, Model Accuracy, Analysing Predictive Accuracy – Outcomes, PLR, U and Y Plot, Errors and Inaccuracy, Recalibration – Detecting Bias, Different Techniques, Power of Recalibration, Limitations in Present Techniques, Improvements.

Suggested Books

1. J.D. Musa, *Software Reliability Engineering*, McGraw Hill, New York , 2004
2. H. Pham, *Software Reliability*, Springer Verlag, New York , 2000
3. Patric D. T.O Connor, *Practical Reliability Engineering, 4th Edition*, John Wesley & Sons , 2003
4. D. Reled, *Software Reliability Methods*, Springer Verlag, New York , 2001

PE-CS-A408	Mobile Apps Development						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
3	0	0	3	75	25	100	3
Purpose	**To introduce the concepts of developing the mobile applications.**						
	Course Outcomes (CO)						
CO1	Be exposed to technology and Mobile apps development aspects.						
CO2	Be competent with the characterization and architecture of mobile applications.						
CO3	Appreciation of nuances such as native hardware play, location awareness, graphics, and multimedia.						
CO4	Perform testing, signing, packaging and distribution of mobile apps.						

Unit 1: Introduction to Mobility

Mobility landscape, Mobile platforms, Mobile apps development, Overview of Android platform, challenges of Android app development, versions of Android, why develop apps for android, Setting up the Mobile App Development environment along with an Emulator.

Mobile Platforms: URIs for mobile apps, Compare and contrast native mobile platforms such as tightly controlled (IPhone), open (Android), and licensed (Windows Mobile), web as a mobile application platform.

Unit II: Building blocks of Mobile

Activities, Activity life cycle and interaction between activities, App User Interface Designing – User Interaction, user input controls, Mobile UI resources (Layout, UI elements, Drawable, Menu)screen navigation, Recycle view. App functionality beyond user interface - Threads, Async task, Services – States and Life Cycle, Notifications, Broadcast receivers, Content provider.

Unit III: Sprucing up Mobile Apps

Triggering, scheduling and optimizing background tasks: Notifications, Scheduling Alarms, transferring data efficiently. Graphics and animation – Custom views, Canvas, Animation APIs, Multimedia – Audio/Video playback and record, Location awareness.

Native data handling –file I/O, Shared preferences, shared data through content provider, Mobile databases such as SQLite, and Enterprise data access (via Internet/Intranet).

Unit IV: Testing and Launching Mobile Apps

Debugging mobile apps, White box testing, Black box testing, and test automation of Mobile apps, JUnit for Android. Loading data using loaders, Permissions, Performance and Security, Firebase and AdMob and publish.

Suggested Books:

1. Barry Burd, *Android Application Development All in one for Dummies*, Wiley publications, 2nd Edition 2015.
2. Android Developer Fundamentals Course– Concepts (Learn to develop Android applications) Concepts Reference *Developed by Google Developer Training Team, 2016.*
3. Valentino Lee, Heather Schneider, and Robbie Schell, Mobile Applications: Architecture, Design, and Development, Prentice Hall, 2004.
4. Rick Boyer, Kyle Mew,Android Application Development Cookbook - Second Edition,2016.
5. Carmen Delessio, Lauren Darcey, Teach Yourself Android Application Development In 24 Hours , SAMS, 2013.
6. Brian Fling, Mobile Design and Development, O'Reilly Media, 2009.
7. Maximiliano Firtman, Programming the Mobile Web, O'Reilly Media, 2010.

OE-CS-402	Cyber Security						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
2	**-**	**-**	**2**	**75**	**25**	**100**	**3 Hrs.**
Purpose	To gain a broad understanding in order to get predictive ways out related to cyber security.						
Course Outcomes							
CO1	To facilitate the basic knowledge of cyber security.						
CO2	To learn about how to maintain the Confidentiality, Integrity and Availability of a data.						
CO3	To get enable to fix the various cyber-attacks.						
CO4	To deal with the digital forensics and related scenarios of cybercrimes.						

Unit I

Introduction: Fundamentals of Cyber Crime, Types of Cyber Crime: crime against individual, Crime against property, Cyber extortion, Drug trafficking, cyber terrorism. Cybercrime issues. Cryptanalysis – steganography - stream and block ciphers - Modern Block Ciphers: Block ciphers principals - Shannon's theory of confusion and diffusion - fiestal structure - data encryption standard (DES) - strength of DES - differential and linear crypt analysis of DES - block cipher modes of operations - triple DES – AES.

Unit 2

Integrity checks and Authentication algorithms MD5 message digest algorithm - Secure hash algorithm (SHA) Digital Signatures: Digital Signatures - authentication protocols - digital signature standards (DSS) - proof of digital signature algorithm - Authentication Applications: Kerberos and X.509 - directory authentication service - electronic mail security-pretty good privacy (PGP) - S/MIME.

Unit 3

Introduction to cyber-attacks: passive attacks, active attacks.

Cyber-crime prevention methods, Application security (Database, E-mail and Internet), Data Security Considerations-Backups, Archival Storage and Disposal of Data, Security Technology Firewall and VPNs, Intrusion Detection, Access Control ,OS Security.

Web Security: Secure socket layer and transport layer security - secure electronic transaction (SET) - System Security: Intruders - Viruses and related threads - firewall design principals – trusted systems.

Unit 4

Digital Forensics: Introduction to Digital Forensics, historical background of digital forensics, Forensic Software and Hardware, need for computer forensics science, special tools and techniques digital forensic life cycle, challenges in digital forensic.

Law Perspective: Introduction to the Legal Perspectives of Cybercrimes and Cyber security, Cybercrime and the Legal Landscape around the World, Why Do We Need Cyber laws, The Indian IT Act, Cybercrime Scenario in India, Cybercrime and Punishment.

IP Security: Architecture - Authentication header - Encapsulating security payloads - combining security associations - key management.

Suggested Books:

1. Nelson Phillips and EnfingerSteuart, "Computer Forensics and Investigations", Cengage Learning, New Delhi, 2009.
2. William Stallings, "Crpyptography and Network security Principles and Practices", Pearson/PHI.
3. Robert M Slade," Software Forensics", Tata McGraw - Hill, New Delhi, 2005.
4. SunitBelapure and Nina Godbole, "Cyber Security: Understanding Cyber Crimes, Computer Forensics And Legal Perspectives", Wiley India Pvt. Ltd.

OE-CS-404	Satellite Communication:						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
2	0	0	2	75	25	100	3
Purpose	**To familiarize the students with the concepts of Satellite communication and various terms, laws and multiple access schemes used in its working.**						
Course Outcomes							
CO1	To understand the concept of basics of satellite communication and various basic laws and terms of satellite communication.						
CO2	To understand the concept and processes of various communication satellites used in satellite communication.						
CO3	To familiarize with the concept and design issues of satellite link design and satellite access.						
CO4	To familiarize with the concepts of Multiple access schemes used in satellite communication.						

Unit -I

SATELLITE ORBITS: Orbital Mechanics- Kepler's laws ,locating the satellite in the Orbit, locating the satellite with respect to the earth, Orbital elements, look angle determination, Sub satellite point, Azimuth and elevation angle calculation, Orbital perturbations, Longitudinal and Inclination changes; Launches and launch vehicles-ELV's, Placing the satellite into geostationary orbit, Doppler shift, range variations, solar eclipse, sun transit outage.

Unit -II

COMMUNICATION SATELLITES: Satellite Subsystems, Attitude and Orbit Control system(AOCS), Telemetry, Tracking, Command and Monitoring (TTC&M), Power System, Communication Subsystems-description, Transponders, satellite antennas-basic antenna types, basic antennas in practice.

Unit -III

Satellite link design and Satellite access: Basic transmission theory**,** system noise temperature and G/T ratio; Downlink design-link budget; Uplink design; design for specified C/N, uplink and downlink attenuation in rain, communication link design procedure; system design examples.

Unit –IV

Multiple access schemes: FDMA, TDMA, CDMA, DAMA; VSAT systems-basic techniques, VSAT earth station engineering, system design; DBS systems-C-band and Ku band home TV, digital DBS; satellite mobile systems; GPS

Suggested Books:

1. Timothy Pratt, Satellite Communications, Wiley India edition
2. Anil K Maini, Satellite Communication, Wiley India edition

OE-CS-406	Social Networks Analysis & Mining						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
2	**0**	**0**	**2**	**75**	**25**	**100**	**3 Hrs.**
Program Objective (PO)	This emerging and innovative field will provide the insight into latest communication techniques used in the online social networks for identifying and representing the relationships and link prediction via the effective combination of graph theory, matrix, clustering, and equivalence between users.						
Course Outcomes (CO)							
CO1	To understand the essentials of social networks by learning link prediction, clustering, community detection and structural relationships among the nodes to determine their relative importance.						
CO2	To explore the detailed explanation of homophily, selection, closure, segregation, relationships and graph creation in an efficient distribution.						
CO3	To analyze the social networks using betweenness, centrality, equivalence relation, centralization, clustering coefficient and structural cohesion, page rank and random graph models to generate visualizations and to perform empirical investigations of network data.						
CO4	To interpret and synthesize the results with respect to modeling epidemics, experimental and generative models and the basic of collated datasets by using equivalence concepts for interpreting complex data to execute better recommendation.						

Unit-I

Introduction to Social Networks, Google Page Rank, Link Prediction, Importance of Acquaintances, Web Graph, Introduction: Emergence of Connectedness, Granovetter's Strength of weak ties, Triads, clustering coefficient and neighborhood overlap, Structure of weak ties, bridges, and local bridges, Emeddedness, Betweenness Measures and Graph Partitioning, Finding Communities in a graph (Brute Force Method), Community Detection Using Girvan Newman Algorithm, Strong and Weak Relationship

Unit-II

Introduction to Homophily, Selection and Social Influence, Foci Closure and Membership Closure, Introduction to Fatman Evolutionary model, Triadic Closure, Spatial Segregation: An Introduction, Schelling Model Implementation, Positive and Negative Relationships – Introduction, Structural Balance, Creating graph, displaying it and counting unstable triangles, Equal Coin Distribution, Random Walk Coin Distribution.

Unit-III

Metrics in social network analysis (Betweenness, Centrality, Equivalence relation, Centralization, Clustering coefficient and Structural cohesion), Diffusion in Networks, Impact of Communities on Diffusion, Cascade and Clusters, Introduction to Hubs and Authorities, Hubs and Authorities, PageRank as a Matrix Operation, Introduction to Power Law, Rich Get Richer Phenomenon, Implementing a Random Graph (Erdos-Renyi Model)

Unit-IV

Rich Get Richer - The Long Tail, Epidemics- An Introduction, Simple Branching Process for Modeling Epidemics, Basic reproductive number, SIR and SIS spreading models, Percolation model, Milgram's Experiment, The Generative Model, Decentralized Search, Basic of Equivalence concepts in Social Networks.

Suggested Books:

1. David Easley and Jon Kleinberg, "Networks, Crowds and Markets", Cambridge University Press.
2. Matthew O. Jackson, "Social and Economic Networks", Princeton University Press.
3. Matthew A. Russell, “Mining the Social Web”, O'Reilly and SPD, Second edition New Delhi.

4. Hanneman, R. A., & Riddle, M., “Introduction to social network methods, Riverside, California: University of California, Riverside. Retrieved from http://faculty.ucr.edu/~hanneman/nettext/.
5. “Social network analysis: Theory and applications”. A free, Wiki Book available at: http://train.ed.psu.edu/WFED-543/SocNet_TheoryApp.pdf.
6. John Scott, Peter J. Carrington, “Social Network Analysis”, SAGE Publishing Ltd.

OE-CS-408	Agile Software Engineering						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
2	0	0	2	75	25	100	3
Purpose	**Introduces the business value of adopting Agile approaches and provide complete understanding of the Agile development practices**						
Course Outcomes (CO)							
CO1	Understand the background and driving forces for taking an Agile approach to software development						
CO2	Understand the business value of adopting Agile approaches						
CO3	Drive development with unit tests using Test Driven Development						
CO4	Apply design principles and refactoring to achieve Agility						

Unit I: Fundamentals of Agile

The Genesis of Agile, Introduction and background, Agile Manifesto and Principles, Overview of Scrum, Extreme Programming, Feature Driven development, Lean Software Development, Agile project management, Design and development practices in Agile projects, Test Driven Development, Continuous Integration, Refactoring, Pair Programming, Simple Design, User Stories, Agile Testing, Agile Tools

Unit II: Agile Scrum Framework

Introduction to Scrum, Project phases, Agile Estimation, Planning game, Product backlog, Sprint backlog, Iteration planning, User story definition, Characteristics and content of user stories, Acceptance tests and Verifying stories, Project velocity, Burn down chart, Sprint planning and retrospective, Daily scrum, Scrum roles – Product Owner, Scrum Master, Scrum Team, Scrum case study, Tools for Agile project management.

Unit III: Agile Testing

Agile Testing Planning and Managing Testing Cycle, Agile Lifecycle and its impact on testing, Principles of Agile Testing, Agile Testing Techniques, Test-Driven Development, User Acceptance Tests, Test Automation.

Agile Project Management Scheduling in an agile project, scheduling challenges, estimating costs, monitoring project progress, burning down the product backlog, reporting, controlling the project

Unit IV: Agile Software Design and Development

Agile design practices, Role of design Principles including Single Responsibility Principle, Open Closed Principle, Liskov Substitution Principle, Interface Segregation Principles, Dependency Inversion Principle in Agile Design, Need and significance of Refactoring, Refactoring Techniques, Continuous Integration, Automated build tools, Version control.

Suggested Books:

- Ken Schawber, Mike Beedle, *Agile Software Development with Scrum*, Pearson publications
- Robert C. Martin, *Agile Software Development, Principles, Patterns and Practices*, Prentice Hall
- Lisa Crispin, Janet Gregory, *Agile Testing: A Practical Guide for Testers and Agile Teams*, Addison Wesley
- Alistair Cockburn, *Agile Software Development: The Cooperative Game*, Addison Wesley

- Mike Cohn, *User Stories Applied: For Agile Software,* Addison Wesley
- Enterprise-Scale Agile Software Development James Schiel Latest edition, CRC Press
- Succeeding with Agile: Software Development Using Scrum Mike Cohn Latest edition, Addison-Wesley

OE-CS-410	Web and Internet Technology						
Lecture	Tutorial	Practical	Credit	Major Test	Minor Test	Total	Time
2	0	0	2	75	25	100	3 Hour
Purpose	To learn the architecture and programming of Internet and study of scripting language :Python						
Course Outcomes							
CO 1	To Learn the basic concepts of internet and its connectivity						
CO 2	To Learn about the services of internet , designing and its architecture						
CO 3	To Learn the basic concepts of Python and its applications in information industry						
CO 4	To Acquaint the knowledge of latest programming language for the implementation of object based and procedure based applications using Python.						

Unit-I: Introduction to Internet

Internet, Growth of Internet, Owners of the Internet, Anatomy of Internet, ARPANET and Internet history of the World Wide Web, basic Internet Terminology, Internet Applications – Commerce on the Internet, Governance on the Internet, Impact of Internet on Society – Crime on/through the Internet, The role of Information Architect, Collaboration and communication, Organizing information, Organizing web sites and Intranets, Creating cohesive organization systems, designing navigation systems, types of navigation systems, Integrated navigation elements, Searching systems, Searching your web site, designing the search interface.

Unit-II: Internet Services and Web Publishing

Setting up a connection: Hardware requirement, Selection of a Modem, Software Requirement, Modem Configuration, Common terminologies: Node, Host, Workstation, bandwidth, Interoperability, Network administrator, network security, Network Components: Severs, Clients, Communication Media, Service options – E-mail, News Firewall, etc.
Introduction to XHTML and HTML5: Basic Text Markup, Images, Hypertext Links, Lists, Tables, Forms in HTML, Syntactic Differences between HTML5 and XHTML, Cascading Style Sheets: Introduction, Levels of Style Sheets, Style Specification Formats, Selector Forms, Property Value Forms, Font Properties, List Properties, Color, Alignment of Text, Box Model, Background Images.

Unit –III: Introduction of Scripting Language: Python

Introduction to Python: Applications of Python in information industry, Introduction to Python, Data Types, Branching Programs, Control Structures, Array and Input, Iteration. Functions and Scoping: Functions and scoping, Recursion and Global variables. Creation, insertion and deletion of items: Strings, Tuples, Lists and Dictionaries.

Unit –IV: Advanced Python

Classes and Object-Oriented Programming: Abstract Data Types and Classes, Inheritance, Encapsulation and Information Hiding. File Handling, Exceptions Handling, Data base (MySQLdb) operation: file check, table creation, insertion and deletion of data, Regular Expressions – REs in Python and Plotting.

Suggested Books

1. “Information Architecture on the World Wide Web”, By Peter Morville, Louis Rosenfeld, O'Reilly Media, 2006.
2. “Programming The World Wide Web”, By Robert W. Sebesta, 8th Edition, Pearson India, 2015.

3. “The Fundamentals of Python: First Programs”, By Kenneth A. Lambert, 2011, Cengage Learning.
4. “Python: The Complete Reference”, By Martin C. Brown, Paperback March 2018
5. “Core Python Programming”, by R. Nageswara Rao, Dreamtech Publication, 2018

OE-CS-412	Automation in Manufacturing						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
2	0	0	2	75	25	100	3
Purpose	The purpose of this course is to impart knowledge of production automation, robotics, flexible manufacturing, CNC programming, material handling and automated storage systems.						
Course Outcomes							
CO1	Students will be able to explain the role automation in manufacturing and robotics in industry.						
CO2	Students will be able to describe the group technology and flexible manufacturing techniques in the automated production line and manufacturing system.						
CO3	Students will be able to explain computer aided process planning and shop floor manufacturing activities.						
CO4	Students will be able to develop CNC programs and understand the concept automated guided vehicle and automated storage system in material handling.						

UNIT I

Introduction: Production system, automation in production system, manual labour in production system, automation principle and strategies, manufacturing industries and products, manufacturing operations, product facilities, product/ production relationship, basic elements of an automation system, advance automation function, level of automation.

Industrial robotics: Robot anatomy and related attributes, joint and links, common robot configuration, joint drive system, sensors in robotics, robot control system, end effectors, grippers and tools, applications of industrial robots, material handling, processing operation, assembly and inspection, robot programming.

UNIT II

Group technology and cellular manufacturing: Part families, parts classifications and coding, production flow analysis, cellular Manufacturing- composite part concept, machine cell design, applications of group technology, grouping parts and machines by rank order clustering technique, arranging machines in a G.T. cell.

Flexible manufacturing: Introduction, FMS components, flexibility in manufacturing – machine, product, routing, operation, types of FMS, FMS layouts, FMS planning and control issues, deadlock in FMS, FMS benefits and applications.

UNIT III

Process planning: Introduction, manual process planning, computer aided process planning – variant, generative, decision logic decision tables, decision trees, Introduction to artificial intelligence.

Shop floor control: Introduction, shop floor control features, major displays, major reports, phases of SFC, order release, order scheduling, order progress, manufacturing control, methodology, applications,shop floor data collections, Types of data collection system, data input techniques, automatic data, collection system.

UNIT IV

CNC basics and part programming: Introduction, historical, background, basic components of an NC, steps in NC, verifications of numerical control machine tool programs, classification of NC Machine tool, basics of motion control and feedback for NC M/C, NC part programming, part programming methods, modern machining system, automatically programmed tools, DNC, adaptive control.

Automated Guided Vehicle and Storage System: Functions of AGV, types of AGV, safety consideration for AGV, design of AGV; Introduction to storage system, storage system

performance, storage location strategies, conventional storage method and equipment, automated storage system, fixed aisle automated storage/ retrieval system, carousel storage systems, analysis of storage system, fixed aisle automated storage/ retrieval systems, carousel storage systems.

Reference Books:

1. Automation, production system and computer integrated manufacturing- Mikell P. Groover, Pearson fourth edition.
2. CAD/CAM: Computer Aided Design and ManufacturingGroover-M.P. and Zimmers E. W.,Prentice Hall International, New Delhi, 1992.
3. CAD/CAM/CIM-P. Radhakrishnan, S. Subramanayan and V.Raju, New Age International (P) Ltd., New Delhi.
4. Computer Integrated Manufacturing- Alavudeen and Venkateshwaran, Prentice- Hall of India Pvt. Ltd., New Delhi.

OE-CS-414	IPR, Bioethics, and Biosafety						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
2	**0**	**0**	**2**	**75**	**25**	**100**	**3hrs**
Program Objective (PO)	Students will able to acquire knowledge of regulatory bodies ,acts and organization indulge in creating a balancing force between advent in technology with monitoring their impacts on human and ecology alongwith biosafety measures with ethical conduct to society.						
Course Outcomes							
CO1	Students will be able to describe the basic terms and procedure for IPR, patent filing and implications on society of commercialized products.						
CO2	Students will be able to learn and describe various act, policies, different organizations and guidelines for biosafety.						
CO3	Students will develop knowledge of outbreak and risk assessment and management at laboratory level along with health impacts.						
CO4	Students will develop awareness of ecological impact of release of genetically modified organisms and monitoring methods.						

UNIT -1

Introduction- Intellectual Property Rights, Copyrights, Trademarks, Trade secrets, Geographical indications, Patents, Patent Filing, Indian Patent act and amendments, Implications of intellectual property rights on the commercialization of Biotechnology products, Patented products in Market and Success story.

UNIT- II

Policies, Agreements and Organization -National biosafety policies and law, The Cartagena protocol on biosafety, Convention on biological diversity, Cross border movement of germplasm and agreements, World Trade Organization and agreements, Updated Regulatory frameworks.

UNIT-III

Biological Containment- Risk assessment, Risk management, General principal for biological containment at laboratory level, Health impact of containment issues-Allergenicity, Antibiotic resistance and Toxicology. Case studies.

UNIT –IV

Ecological Impacts-Genetically Modified organism and impact on biodiversity, gene flow, gene escape and creation of superweeds/ superviruses, Monitoring strategies and method of detecting transgenics(Radioactive /Non radioactive methods).Case studies.

Suggested Books:

1. Padma Nambisan, An introduction to ethical safety and intellectual property rights issues in biotechnology, Academic Press,ISBN-978-0-12-809231-6, 2017.
2. Deepa Goel and Shomini Parashar, IPR, Biosafety and Bioethics, Pearson Education,India,ISBN-978933251429,2013.
3. V. Sree Krishna, Bioethics and Biosafety in Biotechnology, New age international private ltd., 2007.
4. Gerald A. Urban, BioMEMS, Springer, 2010.

OE-CS-416	Signals and Systems						
Lecture	**Tutorial**	**Practical**	**Credit**	**Major Test**	**Minor Test**	**Total**	**Time**
2	**-**	**-**	**2**	**75**	**25**	**100**	**3 Hrs.**
Course Outcomes (CO) At the end of this course, students will demonstrate the ability to							
CO1	Analyze different types of signals.						
CO2	Represent continuous and discrete systems in time and frequency domain using different transforms.						
CO3	Understand sampling theorem and its implications.						
CO4	Apply transform techniques to analyze continuous-time and discrete-time signal and systems						

UNIT-I

Introduction to Signals: Continuous and discrete time signals, deterministic and stochastic signals, periodic and a periodic signal, even and odd signals, energy and power signals, exponential and sinusoidal signals and singular functions.

Introduction to Systems: Linear and non-linear systems, time invariant and time varying systems, lumped and distributed systems, deterministic and stochastic systems, casual and non-causal systems, analog and discrete/digital memory and memory less systems.

UNIT-II

Random Variables: Introduction to Random Variables, pdf, cdf, moments, distributions, correlation functions.

Linear Time Invariant Systems: Introduction to linear time invariant (LTI) systems, properties of LTI systems, convolution integral, convolution sum, causal LTI systems described by differential and difference equations, Concept of impulse response.

UNIT-III

Discretisation of Analog Signals: Introduction to sampling, sampling theorem and its proof, effect of undersampling, reconstruction of a signal from sampled signal.

Fourier Series: Continuous time fourier series (CTFS), Properties of CTFS, Convergence of fourier series, Discrete time Fourier Series (DTFS), Properties of DTFS**,** Fourier series and LTI system.

UNIT-IV

Fourier Transform: Continuous Time Fourier Transform (CTFT), Properties of CTFT, Systems characterized by linear constant- coefficient differential equations, Discrete time fourier transform (DTFT), Properties of DTFT.

Laplace Transform: Introduction to Laplace transform, Region of convergence for laplace transform, Inverse laplace transform, Properties of laplace transform, Analysis and characterization of LTI systems using laplace transform,

Suggested Books:

- Alan V. Oppenheim, Alan S. Willsky, S. Hamid Nawab, Signals and Systems, Prentice Hall India, 2nd Edition, 2009
- Simon Haykins – “Signal & Systems”, Wiley Eastern
- Tarun Kumar Rawat , Signals and Systems , Oxford University Press.
- H. P. Hsu, “Signals and systems”, Schaum’s series, McGraw Hill Education, 2010.
- M. J. Robert “Fundamentals of Signals and Systems”, McGraw Hill Education, 2007.
- B. P. Lathi, “Linear Systems and Signals”, Oxford University Press, 2009.

PE-CS-A402L	Cloud Computing Lab						
Lecture	**Tutorial**	**Practical**	**Credit**	**Minor Test**	**Practical**	**Total**	**Time**
-	**-**	**4**	**2**	**40**	**60**	**100**	**3hrs**
Purpose	Design and Implement various mobile applications using emulators and learn how to Deploy applications to hand-held devices.						
Course Outcomes(CO)							
CO1	Know the components and structure of mobile application development frameworks for Android based mobiles.						
CO2	Understand how to work with various mobile application development frameworks.						
CO3	Learn the basic and important design concepts and issues of development of mobile applications.						
CO4	Understand the capabilities of mobile devices.						

List of Practicals

1. Write a program to use the API's of Hadoop to interact with it.
2. Install a C compiler in the virtual machine created using virtual box and execute Simple Programs
3. Install Google App Engine. Create hello world app and other simple web applications using python/java.
4. Use GAE launcher to launch the web applications.
5. Show the virtual machine migration based on the certain condition from one node to the other.
6. Write a word count program to demonstrate the use of Map and Reduce tasks.
7. Find procedure to set up the one node Hadoop cluster and run simple applications like word count.

PE-CS-A404L	Computer Graphics Lab						
Lecture	**Tutorial**	**Practical**	**Credit**	**Minor Test**	**Practical**	**Total**	**Time**
-	**-**	**4**	**2**	**40**	**60**	**100**	**3hrs**
Purpose	To Design and implement various Line and Circle Drawing Algorithms.						
Course Outcomes(CO)							
CO1	To Implement basic algorithms related to Line & Circle Drawing.						
CO2	Implement various Line & Circle Drawing Algorithms.						
CO3	Hands on experiments on 2-D transformations.						
CO4	Conceptual implementation of Clipping and other drawing algorithms.						

List of Practicals

1. Write a program to implement DDA line drawing algorithm.
2. Write a program to implement Bresenham's line drawing algorithm.
3. Implement the Bresenham's circle drawing algorithm.
4. Write a program to draw a decagon whose all vertices are connected with every other vertex using lines.
5. Write a program to move an object using the concepts of 2-D transformations.
6. Write a program to implement the midpoint circle drawing algorithm any Object Oriented Programming Language like Python, C++, Java.
7. Implement the line clipping algorithm using any Object Oriented Programming Language like Python, C++, Java.
8. Implement boundary fill algorithm using any Object Oriented Programming Language like Python, C++, Java.
9. Implement the depth buffer algorithm using any Object oriented language like Python, C++, Java.
10. Perform the Polygon Clipping Algorithm using any Object oriented language like Python, C++, Java.
11. Draw a Rectangle using Bresenham's and DDA Algorithm using any Object oriented language like Python, C++, Java.

PE-CS-A406L	Software Reliability Lab						
Lecture	**Tutorial**	**Practical**	**Credit**	**Minor Test**	**Practical**	**Total**	**Time**
-	**-**	**4**	**2**	**40**	**60**	**100**	**3hrs**
Purpose	In this course the student will understand the working of software reliability models and reliability prediction models, and able to design reliability models.						
Course Outcomes(CO)							
CO1	To study the computation method for evaluation of software reliability						
CO2	Understand the mechanisms for Evaluation Testing methods in Software Reliability						
CO3	Understand the working of Software Reliability Models						
CO4	To Study and understand procedure of software Reliability Prediction						

List of Practicals

1. To study the Computation of software reliability
2. To implement software Reliability Evaluation Testing methods
3. To understand the working of Functional and Operational Profiles
4. To understand the concept of Time Dependent Software Reliability Models
5. To understand the concept of Time Independent Software Reliability Models.
6. To study Software Reliability Modeling
7. To identify the role of various phases included in software Reliability Prediction
8. To study software Reliability Analyzing Predictive
9. To study software Reliability Recalibration

PE—CS-A408L	Mobile Apps Development Lab						
Lecture	**Tutorial**	**Practical**	**Credit**	**Minor Test**	**Practical**	**Total**	**Time**
-	**-**	**4**	**2**	**40**	**60**	**100**	**3hrs**
Purpose	To understand the components and structure of mobile application development frameworks for Android based mobiles						
Course Outcomes(CO)							
CO1	To understand the components and structure of mobile application Development frameworks for Android based mobiles.						
CO2	To understand how to work with various mobile application development frameworks.						
CO3	To learn the basic and important design concepts and issues of development of mobile applications.						
CO4	To understand the capabilities and limitations of mobile devices.						

List of Practicals

1. Develop an application that uses GUI components, Font and Colors
2. Develop an application that uses Layout Managers and event listeners.
3. Develop a native calculator application.
4. Write an application that draws basic graphical primitives on the screen.
5. Implement an application that implements Multi threading
6. Develop a native application that uses GPS location information.
7. Implement an application that writes data to the SD card.
8. Implement an application that creates an alert upon receiving a message.
9. Write a mobile application that creates alarm clock.
10. Develop a sign-in page with appropriate validation.
11. Develop a real life application that makes use of database.