Bachelor of Vocation (B.Voc.)

Networking & Mobile Applications (IInd Year)

KURUKSHETRA UNIVERSITY, KURUKSHETRA

Scheme of Examination for Bachelor of Vocation (Networking and Mobile Applications)

(w.e.f 2017-2018)

SEMESTER III

Paper Code	Nomenclature	Duration of Exam	External	Internal	Max Marks	Type	Hours per Semester	Credits
BVNM-16-31	Relational Database Management System	3 Hours	80	20	100	General	60	4
BVNM-16-32	Object Oriented Programming with Java	3 Hours	80	20	100	General	60	4
BVNM-16-33	Wireless Networks	3 Hours	80	20	100	General	60	4
BVNM-16-34	Mobile-Commerce & User-Centered Interface Design	3 Hours	80	20	100	Skill	60	4
BVNM-16-35	Practical-Java	3 Hours	80	20	100	Skill	75	5
BVNM-16-36	Practical-RDBMS	3 Hours	80	20	100	Skill	75	5
BVNM-16-37	Case Study		80	20	100	Skill	60	4

SEMESTER IV

Paper Code	Nomenclature	Duration of Exam	External	Internal	Max Marks	Type	Hours in Semester	Credits
BVNM-16-41	Operating System	3 Hours	80	20	100	General	60	4
BVNM-16-42	Network Security	3 Hours	80	20	100	General	60	4
BVNM-16-43	Software Testing	3 Hours	80	20	100	General	60	4
BVNM-16-44	Android Application Development-II	3 Hours	80	20	100	Skill	60	4
BVNM-16-45	Practical-Software Testing	3 Hours	80	20	100	Skill	75	5
BVNM-16-46	Practical-Android Application Development-II	3 Hours	80	20	100	Skill	75	5
BVNM-16-47	Project Work on Android		80	20	100	Skill	60	4

BVNM-16-31 Relational Database Management System

Maximum marks: 100 External: 80
Time: 3 hours Internal: 20

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus.

Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

Unit I

DBMS - Definition, Characteristics, Applications, Advantages. Instance, Schema and Database States, 3-Level Architecture, Data Independence, Database Users.

Data Models - Types and Comparison, Entity Type, Entity Set, Attributes and their Types, Keys, ER Diagram, Data Integrity.

RDBMS - Concept, Components, Codd's Rules.

Unit II

Relational Algebra - Selection, Projection, Union, Intersection, Cartesian Product, Different Types of Join.

Database Anomalies. Normalization - 1NF, 2NF, 3NF, BCNF.

Unit III

Data Definition Using SQL Database - Data Types, Tables, Creating Tables, View In Tables, Eliminating Duplicacy, Insert, Delete, Update and Modify, Renaming, Truncating and Destroying Tables.

Data Constraints - Types, Implementation.

Data Functions - Scalar, Group Functions, Aggregate etc. Creating Index, Duplicate and Unique Index, Reverse Key Index, Bit Map Index, Function Based Index.

Unit IV

Introduction To PL/SQL – PL/SQL Transactions, Transaction Concept, Close Transaction, Create a Save Point.

Cursor - Types, Cursor For Loops, Parameterized Cursor. PL/SQL Security, PL/SQL Database Objects. Import/Export Tools.

TEXT BOOKS:

1. Elmarsi Ramez and Navathe Shamkant B., "Fundamentals of Database Systems", Pearson Publication, 2007
2. Bayross Ivan, "SQL, PL/SQL The Programming Language of Oracle", BPB Publication, 2002

REFERENCE BOOKS:

1. Korth H.F. & Silverschatz A., "Database Concepts", Tata McGraw Hill, 2010
2. Date C.J , "Database Systems", Prentice Hall of India, 2004

BVNM-16-32 Object Oriented Programming with Java

Maximum marks: 100 External: 80
Time: 3 hours Internal: 20

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus.

Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

Unit I

Object Oriented Programming Concepts - Data Abstraction, Encapsulation, Inheritance, Benefits of Inheritance, Polymorphism, Classes and Objects, Procedural and Object Oriented Programming Paradigms.

Java Programming - History of Java, Comments, Data Types, Variables, Constants, Scope and Life Time of Variables, Operators, Operator Hierarchy, Expressions, Type Conversion and Type-Casting, Enumerated Types, Control Flow Block, Scope, Conditional Statements, Loops, Break and Continue Statements, Simple Java Stand Alone Programs, Arrays, Console Input and Output, Formatting Output, Constructors, Methods, Parameter Passing, Static Fields and Methods, Access Control, This Reference, Overloading Methods and Constructors, Recursion, Garbage Collection, Building Strings, Exploring String Class.

Unit II

Inheritance - Inheritance Hierarchies, Super and Sub Classes, Member Access Rules, Super Keyword, Preventing Inheritance: Final Classes and Methods, The Object Class and its Methods.

Interfaces - Interfaces Vs. Abstract Classes, Defining an Interface, Implementing Interfaces, Accessing Implementations Through Interface References, Extending Interfaces.

Packages - Defining, Creating and Accessing a Package, Understanding CLASSPATH, Importing Packages.

Unit III

Exception Handling - Dealing with Errors, Benefits of Exception Handling.

The Classification of Exceptions - Exception Hierarchy, Checked Exceptions and Unchecked Exceptions, Usage of Try, Catch, Throw, Throws and Finally, Re-Throwing Exceptions, Exception Specification, Built In Exceptions, Creating own Exception Sub Classes.

Collection Framework In Java - Introduction to Java Collections, Overview Of Java Collection Frame Work, Generics, Commonly Used Collection Classes Array List, Vector, Hash Table, Stack, Enumeration, Iterator, String Tokenizer, Random, Scanner, Calender and Properties.

Unit IV

GUI Programming With Java - The AWT Class Hierarchy, Introduction to Swing, Swing Vs., AWT, Hierarchy for Swing Components.

Containers - Jframe, Japplet, Jdialog, Jpanel, Overview of Some Swing Components Jbutton, Jlabel, Jtextfield, Jtextarea, Simple Swing Applications.

Layout Management - Layout Manager Types - Border, Grid and Flow.

Event Handling - Events, Event Sources, Event Classes, Event Listeners, Relationship Between Event Sources and Listerners, Delegation Event Model, Examples: Handling a Buttong Click, Handling Mouse Events, Adapter Classes.

TEXT BOOKS:

1. Herbet Schildt and Dale Srien, “Java Fundamentals - A comprehensive Introduction”, TMH, 2013

REFERENCE BOOKS:

1. **Herbet Schildt Osborne, “JAVA 2: THE COMPLETE REFERENCE”, McGraw-Hill, 2015**
2. Y. Daniel Liang, “Introduction to Java Programming”, Prentice Hall, 2011.
3. E Balagurusamy, “Programming with Java”, Tata McGraw-Hill Publishing, 2009

BVNM-16-33 Wireless Networks

Maximum marks: 100 External: 80
Time: 3 hours Internal: 20

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus.
Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

Unit I

Introduction to Wireless Networks Architecture - Characteristics, Applications, Issues, Wireless vs. Wired Networks, Circuit Switched Networks and Packet Switched Networks in Details.
Multiple Radio Access - Medium Access Alternatives, Fixed-Assignment for Voice Oriented Networks, Random Access for Data Oriented Networks, Hand-off and Roaming Support.

Unit II

Cellular Network Generations- GSM, CDMA, GPRS with its Architectures and Application Areas.
Wireless LANs - Introduction to Wireless LAN (IEEE-802.11)-Architecture, Services, Physical layer, MAC Sub-Layer, MAC management Sub-Layer, Other IEEE 802.11 standards, HIPERLAN, Wi-Max standard.

Unit III

Ad-Hoc Networks - Introduction, Issues in Ad-Hoc Wireless Networks, Ad-Hoc Wireless Internet, Ad-Hoc vs Wireless Networks.
MAC Protocol - Issues in Designing a MAC Protocol for Ad-Hoc Wireless Networks, Design Goals of a MAC Protocol for Ad-Hoc Wireless Networks, Classification of MAC Protocols.

Unit IV

MANET Routing Protocols – Types of MANET Protocol **(**On Demand Protocol, Table-Driven and Hybrid Protocols), Wireless Sensor Networks Classification, MAC and Routing Protocols.
Wireless MANs and PANs, Wireless MAN-Physical and MAC Layer Details, Wireless PAN-Architecture of Bluetooth Systems, Physical, MAC Layer Details, Standards, Examples of Wireless Network Standards.

TEXT BOOKS:

1. C.Siva Ram Murthy and B.S. Manoj “Ad-Hoc Wirelss Networks: Architecture and Protocol”, Prentice Hall, 2008

REFERENCE BOOKS:

1. Tanenbaum andrew S., “Computer Networks”, Pearson Education, 2010.
2. Stallings William, “Data and Computer Communications”, Pearson Prentice Hall, 2013.

BVNM-16-34 Mobile Commerce & User-Centered Interface Design

Maximum marks: 100 External: 80
Time: 3 hours Internal: 20

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus.
Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

Unit I

Introduction - Definition of Electronic Commerce, E-Commerce: Technology and Prospects, Need of E-Commerce, Advantages and Disadvantages, Framework, Different E-Commerce Models.
Mobile Commerce - Introduction, Wireless Application Protocol, Wap Technology, WLAN, WWAN, Bluetooth, KVM, Mobile Information Device, E-Commerce Vs. Mobile-Commerce.

Unit II

Electronic Payments - The Set Protocol, Payment Gateway, Digital Certificates, Tokens, Smart Card, Credit Card, Magnetic Strip Card, E-Checks, Credit/Debit Card Based EPS, Online Banking.

Unit III

User Centered Interface Design (UCD) and Human Computer Interaction (HCI)- Human Aspects, Interface Design-Principles and Methods of Design (User Analysis, Task Analysis, Environment Analysis), Guidelines: Principles and Rules.

Unit IV

Interaction/ Interface Evaluation - The Role Of Evaluation , Collection Of Usage Data, Methods For Conducting Usability Studies- Technology Aspects Of UCD and HCI , Input And Output Devices And Methodologies, Interaction Styles

TEXT BOOKS:

1. Jenny Preece, Yvonne Rogers, and Helen Sharp, "*Interaction Design***"**, John Wiley & Sons New York, 2007.

REFERENCE Books:

1. D.D. McCracken and R.J. Wolfe, "User Centered Web Site Design", Pearson Prentice Hall: Upper Saddle River, NJ, 2004.
2. Alan Dix, Janet E. Finlay, Gregory D. Abowd, Russell Beale, "*Human-Computer Interaction*", Prentice Hall, 2004.
3. Ravi Kalakota, andrew Winston, "Frontiers of Electronic Commerce", Addison- Wesley. 2002
4. Pete Loshin , John Vacca, "Electronic Commerce", New Age International, 2005
5. Goel, Ritendra, "E-commerce", New Age International 2016
6. Laudon, "E-Commerce: Business, Technology, Society", Pearson Education, 2008

BVNM-16-41 Operating System

Maximum marks: 100 External: 80
Time: 3 hours Internal: 20

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus.

Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

Unit I

Introductory Concepts: Operating system functions and characteristics, historical evolution of operating systems, Types of operating systems, Methodologies for implementation of O/S services system calls, system programs.

Unit II

Process Management: Process concepts, Process states and Process Control Block.

CPU Scheduling: Scheduling criteria, Levels of Scheduling, Scheduling algorithms, Multiple processor scheduling.

Unit III

Storage Management - Memory Management of Single-User and Multi-User OS, Partitioning, Swapping, Paging and Segmentation, Virtual Memory, Page Replacement Algorithms, Thrashing.

UNIT IV

Device Management - I/O Hardware, Application I/O Interface, Kernel I/O Subsystem, Transforming I/O to Hardware Operation, Streams.

Disk Scheduling - Disk Structure, Disk Management, Swap-Space Management.

TEXT BOOKS:

- Silberschatz A., Galvin P.B.,and Gagne G., “Operating System Concepts”, John Wiley & Sons, Inc.,New York.
- Godbole, A.S., “Operating Systems”, Tata McGraw-Hill Publishing Company, New Delhi.

REFERENCE BOOKS:

- Deitel, H.M., “Operating Systems”, Addison- Wesley Publishing Company, New York.
- Tanenbaum, A.S., “Operating System- Design and Implementation”, Prentice Hall of India, New Delhi.

BVNM-16-42 Network Security

Maximum marks: 100 External: 80
Time: 3 hours Internal: 20

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus.
Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

Unit-I

Introduction To The Concepts Of Security - The Need for Security, Security Approaches, Principles ff Security, Types of Attacks.
Cryptographic Techniques - Plain Text and Cipher Text, Substitution Techniques, Transposition Techniques, Encryption and Decryption.
Symmetric and Asymmetric Key Cryptography, Key Range and Key Size, Possible Types of Attacks.

Unit-II

Computer-Based Symmetric Key Cryptographic Algorithms - Algorithm Types and Modes, An Overview of Symmetric Key Cryptography, Diffie-Hellman Key Exchange Algorithm, DES, International Data Encryption Algorithm (IDEA), RC5, Blowfish, AES, Differential and Linear Cryptanalysis.

Unit III

Computer-Based Asymmetric Key Cryptography - Brief History of Asymmetric Key Cryptography, An Overview of Asymmetric Key Cryptography, The RSA Algorithm, Symmetric and Asymmetric Key Cryptography Together, Digital Signatures, Knapsack Algorithm, Some other Algorithms.

Unit IV

Internet Security Protocols - Basic Concepts, Secure Socket Layer, Secure Electronic Transaction, SSL Versus SeET HTTPs, 3-D Secure Protocol, Electronic Money, E-Mail Security, Security on Various Layers of Communication Model, Wireless Application Protocol (WAP) Security, Security In GSM.

TEXT BOOKS:

1. Atul Khate, “Cryptography and Network Security”,Tata McGraw-Hill, 2013

REFERENCE BOOKS:

1. William Stallings, “Cryptography and Network Security principles and practice”, Prentice Hall PTR, 2003.
2. Behrouz Aforouzan, “Cryptography and Network Security”, McGraw Hill, 2011

BVNM-16-43 Software Testing

Maximum marks: 100 External: 80
Time: 3 hours Internal: 20

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus.

Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

Unit I

Fundamentals of Testing - Human and Errors, Testing and Debugging, Software Quality, Requirement Behaviors and Correctness, Fundamentals of Test Process, General Principles of Testing, Test Metrics.

Role of Testing in SDLC - Review of Software Development Models (Waterfall Model, Spiral Model, W-Model, V-Model), Test on Different Levels (Unit, Component, Module, Integration, System, Acceptance, Generic).

Unit II

Black Box Testing - Introduction, Equivalence Class Partitioning, Boundary Value Analysis, State Transition Test, Cause Effect Graphing and Decision Table Techniques. Advanced Black Box Techniques.

Unit III

White Box Technique - Statement Coverage, Branch Coverage, Path Coverage, Gray Box Testing, Instrumentation and Tool Support of Gray Box Testing, Intuitive and Experience Based Testing, Advanced White Box Techniques.

Unit IV

Test Management - Test Organization, Tasks and Qualifications, Test Planning, Quality Assurance Plan, Prioritization Plan, Test Exit Criteria, Preventive Vs Reactive Approach, Analytical Vs Heuristic Approach, Test Activity Management-Incident Management, Configuration Management, Test Progress Monitoring and Control- Specialized Testing-Performance, Load, Stress, System Testing.

TEXT BOOKS:

1. Spillner Andreas Linz Tilo Schaefer Hans, “Software Testing Foundation”, Shoff Publishers & Distribuions, 2007
2. Sriniwasan D., Gopalswamyr., “Software Testing:Principles & Practices”, Pearson Education 2006

REFERENCE BOOKS:

1. Mathur Aditya P., “Foundations of Software Testing Custom”, Pearson Education, 2000
2. Binder Robert V., “Testing Object Oriented System, Models,Patterns,& Tools”, Addison Wesley, 1996

BVNM-16-44 Android Application Development-II

Maximum marks: 100 External: 80
Time: 3 hours Internal: 20

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus.

Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

Unit I

Android Services - Android Service API, Android Started Service, Bound Service, Android Service Life Cycle.

Storage in Android - Internal, External, Sqlite - Sqlite API, Spinner, Listview, Content Provider- Built-In and Custom.

Unit-II

Android Notification - Api, Creating Notification Builder, Setting Notification Properties, Issue Notifications, Attaching Actions, Notification Compact, Builder Class Android Notification Examples

Unit III

Introduction of Multimedia in android - Multimedia API, Playing Audio, Creating Audioplayer, Playing Video, Alarm Manager.

Sensors - Sensor API , Motion Sensor , Position Sensor , Sensor Values , Sensor Manager Class , Sensor Class, Sensor Event Class, Sensor Event Listener Interface, Sensor Examples.

Unit-IV

android Animation - Animation API, Drawable Class, Rotate Animation, Fade Animation, Zoom Animation, Animation Examples .

Graphics API - 2D Graphics, Android, Graphics Canvas, Android Graphics Paintclass,

Android Map -V2 API, Adding Map, Customizing Map, Google Mapclass, Android Google Map Application.

TEXT BOOKS:

1. Darcey Lauren and Conder Shane, “Android Wireless Application Development”, Pearson Education, 2011.
2. Schildt Hervert, “Java The Complete Reference”, McGraw Hill Education, 2014

REFERENCE BOOKS:

1. Reto Meier, “Professional android 2 Application Development”, Wiley India Pvt. Ltd., 2011.
2. Murphy L Mark , “Beginning android”, Wiley India Pvt. Ltd, 2009.
3. Mednieks Zigurd, Dornin Laird, Meike G. Blake & Nakamura Masumi, “Programming android”, O’Reilly Publications, 2011.