

**BACHELOR OF COMPUTER APPLICATIONS SCHEME OF EXAMINATION
(w.e.f. 2015-16)**

THIRD YEAR						
Paper No.	Title of Paper	External Marks	Internal Marks	Maximum Marks	Pass Marks	Exam Duration
BCA-301	OBJECT ORIENTED PROGRAMMING USING C++	80	20	100	35	3hrs
BCA-302	WEB DESIGNING	80	20	100	35	3hrs
BCA-303	COMPUTER NETWORKS	80	20	100	35	3hrs
BCA-304	MANAGEMENT INFORMATION SYSTEM	80	20	100	35	3hrs
BCA-305	COMPUTER GRAPHICS	80	20	100	35	3hrs
BCA-306	E-COMMERCE	80	20	100	35	3hrs
BCA-307	LAB – I BASED ON BCA-301			100	35	3hrs
BCA-308	LAB – II BASED ON BCA-302			100	35	3hrs
	TOTAL MARKS	480	120	800	280	

BCA – 301 OBJECT ORIENTED PROGRAMMING USING C++

Maximum Marks: 100
Minimum Pass Marks: 35
Time: 3 hours

External: 80
Internal: 20

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. 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.

UNIT – I

Object oriented Programming: Object-Oriented programming features and benefits. Object-Oriented features of C++, Class and Objects, Structures, Scope resolution operator and its significance, Static Data Members, Static member functions, Nested and Local Class.

Constructor, Initialization using constructor, types of constructor– Default, Parameterized & Copy Constructors, Constructor overloading, Default Values to Parameters, Destructors.

UNIT – II

Manipulators, Friend Function, Friend Class, Arrays, Array of Objects, Passing and Returning Objects to Functions, String Handling in C++, Dynamic Memory Management: Pointers, new and delete Operator, Array of Pointers to Objects, this Pointer, Passing Parameters to Functions by Reference & pointers.

Polymorphism: Operators in C++, Precedence and Associativity Rules, Operator Overloading, Unary & Binary Operators Overloading, Function Overloading, Inline Functions.

UNIT – III

Dynamic Polymorphism: Function Overriding, Virtual Function and its Need, Pure Virtual Function, Abstract Class.

Type Conversion: Basic Type Conversion, Conversion between objects and basic types, Conversion between objects of different classes, Inheritance: Rules of Derivations – Private, Protected and Public Derivations.

UNIT – IV

Different Forms of Inheritance – Single, Multiple, Multilevel, Hierarchical and Multipath Inheritance Roles of Constructors and Destructors in Inheritance.

Genericity in C++: Templates in C++, Function templates, Class templates in C++.

Exception Handling in C++: try, throw and catch; Introduction to files handling in C++

TEXT BOOKS:

- Herbert Schildt, C++, The Complete Reference, Tata McGraw-Hill
- Robert Lafore, Object Oriented Programming in C++, SAMS Publishing

REFERENCE BOOKS:

- Bjarne Stroustrup, The C++ Programming Language, Pearson Education
- Balaguruswami, E., Object Oriented Programming in C++, Tata McGraw-Hill.

BCA-302: WEB DESIGNING

Maximum Marks: 100
Minimum Pass Marks: 35
Time: 3 hours

External: 80
Internal: 20

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. 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.

UNIT – I

Introduction to Internet and World Wide Web; Evolution and History of World Wide Web; Basic Features; Web Browsers; Web Servers; Hypertext Transfer Protocol; URLs; Searching and Web-Casting Techniques; Search Engines and Search Tools.

Steps for Developing Website; Choosing the Contents; Home Page; Domain Names; Internet Service Provider; Planning and Designing Web Site; Creating a Website; Web Publishing: Hosting Site;

UNIT – II

Introduction to HTML; Hypertext and HTML; HTML Document Features;

HTML Tags; Header, Title, Body, Paragraph, Ordered/Unordered List, Creating Links; Headers; Text Styles; Text Structuring; Text Colors and Background; Formatting Text; Page layouts; Insertion of Text, Movement of Text

Images: Types of Images, Insertion of Image, Movement of Image, Ordered and Unordered lists; Inserting Graphics; Table Handling Functions like Columns, Rows, Width, Colours; Frame Creation and Layouts; Working with Forms and Menus; Working with Buttons like Radio, Check Box.

UNIT-III

DHTML: Introduction, Features, Events, Dynamic Positioning, Layer Object, Properties of STYLE, Dynamic Styles, Inline Styles, Event Handlers; Cascading Style Sheets (CSS): Basic Concepts, Properties, Creating Style Sheets; Common Tasks with CSS: Text, Fonts, Margins, Links, Tables, Colors; Marquee; Mouseovers; Filters and Transitions; Adding Links; Adding Tables; Adding Forms; Adding Image and Sound; Use of CSS in HTML Documents Linking and Embedding of CSS in HTML Document

UNIT – IV

Microsoft FrontPage: Introduction, Features, Title Bar, Menu bar, FrontPage Tool Bar, Style, FontFace and Formatting Bar, Scroll Bars

XML: Introduction, Features, XML Support and Usage, Structure of XML Documents, Structures in XML, Creating Document Type Declarations, Flow Objects, Working with Text and Font, Color and Background Properties.

TEXT BOOKS:

- Bayross Ivan, Web Enabled Commercial Applications Development using HTML, Javascript, DHTML & PHP, BPB Publication, 2005
- Powell Thomas, The Complete Reference HTML & CSS, Tat Mc-Graw Hill, 2010
- Jon Duckett, Beginning web programming with HTML, XHTML, CSS and JavaScript– Wiley India Pvt. Ltd.

REFERENCE BOOKS:

- Wendy Willard, HTML Beginners Guide, Tata McGraw-Hill
- Deitel and Goldberg, Internet and World Wide Web, How to Program, PHI.
- Raj Kamal, Internet and Web Technologies, Tata McGraw-Hill.
- Multimedia and Web Technology, Ramesh Bangia, Firewall Media.

BCA-303: COMPUTER NETWORKS

Maximum Marks: 100
Minimum Pass Marks: 35
Time: 3 hours

External: 80
Internal: 20

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. 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 Data Communication and Computer Networks; Uses of Computer Networks; Types of Computer Networks and their Topologies; Network Hardware Components: Connectors, Transceivers, Repeaters, Hubs, Network Interface Cards and PC Cards, Bridges, Switches, Routers, Gateways; Network Software: Network Design issues and Protocols; Connection-Oriented and Connectionless Services; OSI Reference Model; Networking Models: Distributed Systems, Client/Server Model, Peer-to-Peer Model, Web-Based Model and Emerging File-Sharing Model;

UNIT – II

Analog and Digital data and signals; Bandwidth and Data Rate, Capacity, Baud Rate; Transmission Impairment; Data Rate Limits; Guided Transmission Media; Wireless Transmission ; Communication Satellites; Switching and Multiplexing; Modems and Modulation techniques; ADSL and Cable Modems;

UNIT - III

Data Link Layer Design issues; Error Detection and Correction; Sliding Window Protocols: One-bit, Go Back N and Selective Repeat; Media Access Control: ALOHA, Slotted ALOHA, CSMA, Collision free protocols; Introduction to LAN technologies: Ethernet, Switched Ethernet, Fast Ethernet, Gigabit Ethernet; Token Ring; Introduction to Wireless LANs and Bluetooth; VLANs

UNIT – IV

Routing Algorithms: Flooding, Shortest Path Routing, Distance Vector Routing; Link State Routing, Hierarchical Routing; Congestion Control; Traffic shaping; Choke packets; Load shedding; Elements of Transport Protocols; Network Security Issues: Security attacks; Encryption methods; Digital Signature; Digital Certificate

TEXT BOOKS:

- Andrew S. Tanenbaum, “Computer Networks”, Pearson Education.
- Michael A. Gallo, William M. Hancock, “Computer Communications and Networking Technologies”, CENGAGE Learning.

REFERENCE BOOKS:

- Behrouz A Forouzan, “Data Communications and Networking”, McGraw Hill.
- Bhushan Trivedi, “Computer Networks”, Oxford

BCA – 304 MANAGEMENT INFORMATION SYSTEM

Maximum Marks: 100

External: 80

Minimum Pass Marks: 35

Internal: 20

Time: 3 hours

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UNIT – I

Introduction to system and Basic System Concepts, Types of Systems, The Systems Approach, Information System: Definition & Characteristics, Types of information, Role of Information in Decision-Making, Sub-Systems of an Information system: EDP and MIS management levels, EDP/MIS/DSS.

UNIT –II

An overview of Management Information System: Definition & Characteristics, Components of MIS, Frame Work for Understanding MIS: Information requirements & Levels of Management, Simon's Model of decision-Making, Structured Vs Un-structured decisions, Formal vs. Informal systems.

UNIT – III

Developing Information Systems: Analysis & Design of Information Systems: Implementation & Evaluation, Pitfalls in MIS Development.

UNIT – IV

Functional MIS: A Study of Personnel, Financial and production MIS, Introduction to e-business systems, ecommerce – technologies, applications, Decision support systems – support systems for planning, control and decision-making

TEXT BOOK:

- J. Kanter, “Management/Information Systems”, PHI.
- Gordon B. Davis, M. H. Olson, “Management Information Systems – Conceptual foundations, structure and Development”, McGraw Hill.

REFERENCE BOOK:

- James A. O’Brien, “Management Information Systems”, Tata McGraw-Hill.
- James A. Senn, “Analysis & Design of Information Systems”, Second edition, McGraw Hill.
- Robert G. Murdick & Joel E. Ross & James R. Claggett, “Information Systems for Modern Management”, PHI.
- Lucas, “Analysis, Design & Implementation of Information System”, McGraw Hill.

BCA-305: COMPUTER GRAPHICS

Maximum Marks: 100
Minimum Pass Marks: 35
Time: 3 hours

External: 80
Internal: 20

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UNIT – I

Introduction to Computer Graphics; Interactive and Passive Graphics; Applications of Computer Graphics; Display Devices: CRT; Random Scan, Raster Scan, Refresh Rate and Interlacing, Bit Planes, Color Depth, Color Palette, Color CRT Monitor, DVST, Flat-Panel Displays: Plasma Panel, LED, LCD; Lookup Table, Interactive Input Devices, Display Processor, General Purpose Graphics Software, Coordinate Representations;

UNIT – II

Point-Plotting Techniques: Scan Conversion, Scan-Converting a Straight Line: The Symmetrical DDA, The Simple DDA, Bresenham's Line Algorithm; Scan-Converting a Circle: Circle drawing using Polar Coordinates, Bresenham's Circle Algorithm, Scan-Converting an Ellipse: Polynomial Method, Trigonometric Method; Polygon Area Filling: Scan-line Fill and Flood Fill Algorithms;

UNIT – III

Two-Dimensional Graphics Transformation: Basic Transformations: Translation, Rotation, Scaling; Matrix Representations and Homogeneous Coordinates; Other Transformations: Reflection, Shearing; Coordinate Transformations; Composite Transformations; Inverse Transformation; Affine Transformations; Raster Transformation;
Graphical Input: Pointing and Positioning Devices and Techniques

UNIT – IV

Two-Dimensional Viewing: Window and Viewport, 2-D Viewing Transformation
Clipping: Point Clipping; Line Clipping: Cohen-Sutherland Line Clipping Algorithm, Mid-Point Subdivision Line Clipping Algorithm; Polygon Clipping: Sutherland-Hodgman Polygon Clipping Algorithm;
Three-Dimensional Graphics: Three-Dimensional Display Methods; 3-D Transformations: Translation, Rotation, Scaling; Composite Transformations;

TEXT BOOKS:

- Donald Hearn, M. Pauline Baker, "Computer Graphics", PHI.
- Apurva A. Desai, "Computer Graphics", PHI, 2010

REFERENCE BOOKS:

- Newmann & Sproull, "Principles of Interactive Computer Graphics", McGraw Hill.
- Foley, "Computer Graphics Principles & Practice", Addison Wesley.
- Rogers, "Procedural Elements of Computer Graphics", McGraw Hill.
- Zhigang Xiang, Roy Plastock, "Computer Graphics", Tata McGraw Hill.
- D.P. Mukherjee, "Fundamentals of Computer Graphics and Multimedia", PHI.

BCA-306 E-COMMERCE

Maximum Marks: 100
Minimum Pass Marks: 35
Time: 3 hours

External: 80
Internal: 20

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Unit-I

Introduction to E-Commerce:-Business operations; E-commerce practices vs. traditional business practices; concepts of b2b, b2c,c2c,b2g,g2h,g2c; Features of E-Commerce, Types of Ecommerce Systems, Elements of E-Commerce, principles of E-Commerce, Benefits and Limitations of E-Commerce.

Management Issues relating to e-commerce. Operations of E-commerce: Credit card transaction; Secure Hypertext Transfer Protocol (SHTTP); Electronic payment systems; Secure electronic transaction (SET); SET's encryption; Process; Cybercash; Smart cards; Indian payment models.

Unit-II

Applications in governance: EDI in governance; E-government; E-Governance applications of Internet; concept of government –to- business, business-to-government and citizen-to-government; E-governance models; Private sector interface in E-governance. Applications in B2C: Consumers shopping procedure on the Internet; Impact on disinter mediation and re-intermediation; Global market; Strategy of traditional department stores.

Unit-III

Products in b2c model; success factors of e-brokers; Broker-based services on-line; On-line travel tourism services; Benefits and impact of e-commerce on travel industry; Deal estate market; online stock trading and its benefits; Online banking and its benefits; On-line financial services and their future; E-auctions – benefits, implementation and impact.

Unit-IV

Applications in B2B: Key technologies for b2b; architectural models of b2b, characteristics of the supplier –oriented marketplace, buyer-oriented marketplace and intermediary-oriented marketplace; Just In Time delivery in b2b; Internet-based EDI from traditional EDI; Marketing Issues in b2b. Emerging Business models: Retail model; Media model; advisory model, made-to-order manufacturing model; Do-it- yourself model; Information service model; Emerging hybrid models; Emerging models in India, Internet & E-Commerce scenario in India; Internet security Issues; Legal aspects of E-commerce

TEXT BOOKS:

- Turban E., Lee J., King D. and Chung H.M: “Electronic commerce-a Managerial Perspective”, Prentice-Hall International, Inc.
- Bhatia V., “E-commerce”, Khanna Book Pub. Co.(P) Ltd., Delhi.

REFERENCE BOOKS

- Bharat Bhasker, “Electronic Commerce -Framework, technologies and Applications”,TMH Publications
- Whitely David , “ Electronic Commerce”, TMH, N Delhi.
- Shurety, “E-business with Net Commerce”, Addison Wesley.
- Kosiur, “Understanding E—Commerce”, Prentice Hall of India, N. Delhi.