



RANI DURGAVATI VISWAVIDYALAYA, JABALPUR
Bachelor of Computer Applications (BCA)

**Scheme of Examination for BCA Course (Regular) for all
Affiliated Colleges of RDVV**

BCA- I SEM					
Course Code	Subject Name	Theory Paper Marks	Internal Evolution 50 % For Unit test 50% for Attendance	Practical exams	Total Marks
BCA-101	Fundamental of Computer	70	30		100
BCA-102	Operating System (Dos, Windows, Unix)	70	30		100
BCA-103	P C Package	70	30		100
BCA-104	Programming in C	70	30		100
BCA-105	Communicative English	70	30		100
BCA-106	Computer Lab-I (Pro. in C+ P C Package)			100	100
Total Marks					600
Minimum Passing marks in Theory : 40 % and Practical : 50%					

BCA-II SEM					
Course Code	Subject Name	Theory Paper Marks	Internal Evolution 50 % For Unit Test 50% for Attendance	Practical exams	Total Marks
BCA-201	Computer System Architecture	70	30		100
BCA-202	Internet Concept & Web Design	70	30		100
BCA-203	Object Oriented Programming with C++	70	30		100
BCA-204	Data Base Management System	70	30		100
BCA-205	System Analysis & Design and MIS	70	30		100
BCA-206	Computer Lab-II (HTML, JavaScript, C++)			100	100
Total Marks					600
Minimum Passing marks in Theory : 40 % and Practical : 50%					

BCA-III SEM					
Course Code	Subject Name	Theory Paper Marks	Internal Evolution 50 % For Unit test 50% for Attendance	Practical exams	Total Marks
BCA-301	Cyber Security	70	30		100
BCA-302	Data Structure	70	30		100
BCA-303	Mathematical Foundation	70	30		100
BCA-304	R. D. B. M. S. (ORACLE)	70	30		100
BCA-305	Computer Lab-III-A (Practical In DS)			100	100
BCA-306	Computer Lab-II (Practical in SQL and PL/SQL&)			100	100
Total Marks					600
Minimum Passing marks in Theory : 40 % and Practical : 50%					

BCA-IV SEM					
Course Code	Subject Name	Theory Paper Marks	Internal Evolution 50 % For Unit test 50% for Attendance	Practical exams	Total Marks
BCA-401	Programming in VB.Net	70	30		100
BCA-402	Theory of Operating System	70	30		100
BCA-403	Software Engineering	70	30		100
BCA-404	Numerical Methods & Analysis	70	30		100
BCA-405	Computer Lab-III-A (Practical In VB.net)			100	100
BCA-406	Minor Project			100	100
Total Marks					600
Minimum Passing marks in Theory : 40 % and Practical : 50%					

BCA-V SEM					
Course Code	Subject Name	Theory Paper Marks	Internal Evolution 50 % For Unit test 50% for Attendance	Practical exams	Total Marks
BCA-501	Computer Network	70	30		100
BCA-502	Programming In Java	70	30		100
BCA-503	Data Mining	70	30		100
BCA-504	Programming with ASP.net	70	30		100
BCA-505	Computer Lab-V-A (Practical In Java)			100	100
BCA-506	Computer Lab-V-B (Practical In Asp.net)			100	100
Total Marks					600
Minimum Passing marks in Theory : 40 % and Practical : 50%					

BCA-VI SEM					
Course Code	Subject Name	Theory Paper Marks	Internal Evolution 50% for Unit test 50% for Attendance	Practical exams	Total Marks
BCA-601	PHP & MYSQL	70	30		100
BCA-602	Cloud Computing	70	30		100
BCA-603	Major Project Dissertation			200	200
BCA-604	Viva Voce			100	100
Total Marks					500
Minimum Passing marks in Theory : 40 % and Practical : 50%					

Examination Pattern:

End semester examination will contain three sections as A,B & C

Section-A will be of objective type, Section- B will have short answers &Section- C will consist of long answers. Marks distribution for all sections will be as follows:

Section- A 1*10=10 marks

Section- B 4*5=20 marks

Section- C 8*5=40 marks

Total =70 marks

BCA FIRST SEMSETER

BCA - I SEM					
Course Code	Subject Name	Theory Paper Marks	Internal Evolution 50 % For Unit test 50% for Attendance	Practical exams	Total Marks
BCA-101	Fundamental of Computer	70	30		100
BCA-102	Operating System (Dos, Windows, Unix)	70	30		100
BCA-103	P C Package	70	30		100
BCA-104	Programming in C	70	30		100
BCA-105	Communicative English	70	30		100
BCA-106	Computer Lab-I (Pro. in C + P C Package)			100	100
Total Marks					600
Minimum Passing marks in Theory : 40 % and Practical : 50%					

BCA-101: FUNDAMENTALS OF COMPUTER AND PROGRAMMING

**Max. Marks-70,
Min. Marks - 28**

UNIT-I

COMPUTER INTRODUCTION TO COMPUTER: Computer system characterization & capabilities.Speed, Accuracy, Reliability, Memory Capability, Repeatability.COMPUTER HARDWARE & SOFTWARE: Block Diagram of a Computer, Different Types of Software's. TYPES OF COMPUTER: Analog Digital & Hybrid, General and Special Purpose Computers. **COMPUTER GENERTIONS:** Characteristics of Computer Generations Computer Systems Micros, Minis & Mainframes. INTRODUCTION TO PC: The IBM Personal Computer, Type of PC systems PC, XT & AT, Pentium PCS, Limitations of Micro-computer.

UNIT-II

COMPUTER ORGANIZATION:- INTRODUCTION TO INPUT DEVICES: Categorizing Input Hardware, Keyboard, Direct Entry-card Reader, Scanners, Devices- O.M.R. Character Scanner, Character Readers, MICR, Smart Cards, Voice Input Devices, Pointing Devices-Mouse, Light Pen.

STORAGE DEVICES: Storage Fundamentals, Primary and Secondary Storage, Data Storage and Retrieval Methods-Sequential, Direct & Indexed & Sequential, Tape Storage and Retrieval Methods Tape Storage Devices, Characteristics & Limitation, Direct Access Storage for Microcomputers- Hard Disks, Disk Cartridge, Direct Access Storage Devices for Large Computer Systems, Mass Storage Systems and Optical Disks CD ROM.65Retrieval Methods-Sequential, Direct & Indexed & Sequential, Tape Storage and Retrieval Methods Tape Storage Devices, Characteristics & Limitation, Direct Access Storage for Microcomputers- Hard Disks, Disk Cartridge, Direct Access Storage Devices for Large Computer Systems, Mass Storage Systems and Optical Disks CD ROM.

UNIT-III

DATA PROCESSING: DATA, Data Processing system, Storing Data, Processing data.**CENTRAL PROCEEING UNIT:** The Microprocessor Control Unit, ALU, Register, Buses Main Memory, Main Memory (RAM) for Microcomputers, Read-only Memory.**COMPUTER OUTPUT:** Output Fundamentals, Hardcopy Output Devices, Impact printers, Non-Impact printer's plotters, Computer Output Microfilm/Microfiche (COM) System, Softcopy output Devices, Cathodes Ray Tube and Flat Screen Technologies.

UNIT-IV

COMPUTER SOFTWARES:-SYSTEM SOFTWARES: System Software Versus Application Software, Type of System. Software's, Introduction Types of Operating System Programs, Booting Loader, Diagnostic Tests, Operating system executive, BIOS, Utility Programs, File Maintenance, Language processors, Assembler, Compiler And Interpreter.**APPLICATIONS SOFTWARE:** Microcomputer Software, Interacting with System, Trends in PC Software, Types of Application Software, E Versus High Level Language, Machine Code (or Machine Language) Advantages of using Machine Code, Disadvantages of using Machine Code, Assembly Language, Assembler, Advantages of Assemble Languages, Limitations of Assembly Languages. The Need for Assembly Languages.

UNIT-V

HIGH LEVEL LANGUAGES: Development of Higher Level Languages, Machine Independence and portability, Advantages of High Level Languages, problem Oriented Languages. Procedure Oriented Languages, Compilers and Interpreters, Examples of some High Level Languages, object Oriented Programming. Fourth Generation Languages, Difference Between a Higher Level & Fourth Generation Languages, Merits and Demerits of 4 GLS, Type of 4 GLS. The Future of 4-GLS, Few popular 4-GLS, Application program Generators (APGS).

TEXT BOOK:

1. Computer Today by S.K.Bansandra: Galgotia publication Pvt.Ltd. New Delhi.

Books:

1. Computer Fundamentals By P.K. Sinha
2. O' Level Module 1 by V.K. Jain
3. O' Level Mode Simple By Satish Jain
4. Essential of IT (Hindi Medium) –Pragya Publication

Note : There Shall be Ten Questions in the question paper, Two questions from each unit. The student will have to Attempt five questions, selecting one question from each unit.

BCA-102: OPERATING SYSTEMS (DOS & WINDOWS, UNIX)

Max. Marks-70,
Min. Marks – 28

UNIT-I

DOS:-Introduction - History & Version of DOS.**DOS Basics**-Physical structure of disk, drive name, FAT, file & directory structure and naming rules, Booting process, DOS system files.**DOS Commands** – Internal – Dire, MD, CD, RD, COPY, DEL, REN, VOL, DATE, TIME CLS, PATH, TYPE. **External**- CHKDSK, XCOPY, PRINT, DISKCOPY, DISCOMP, DOSKEY, TREE, MOVE, LABEL, APPEND, FORMAT, SORT, FDISK, BACKUP, EDIT, MODE, ATTRIB HELP, SYS.

UNIT-II

WINDOWS 95/98:-Hardware requirements of Windows, Windows, Windows concepts, features, windows structure, Desktop, Taskbar, Start Menu, My Computer, Recycle bin. **Windows Accessories**: Calculator, Notepad, Paint, WordPad, Character map. **Windows Explorer**: Creating folders and other Explorer facilities. Entertainment, CD player, DVD Player, Media Player, Sound Recorder, Volume Control.

UNIT-III

An overview of UNIX and historical perspective, understanding UNIX commands arguments, options and filename, Combining commands, Entering a command before previous command has finished (pg. 1-38).

UNIT-IV

General purpose utilities – cal, data, cal, who, try, uname, password, lock, ehco, bc, time, spell, ispell, file, system, ordinary files, directory files, device files, special files pathname, mkdir, rmdir, ls(with options), cd (pg.41-67).

UNIT-V

Handling ordinary files displaying and creating files, copying, deleting, renaming files, pattern matching, painting a files, line, word and character counting, comparing two files, finding what is common. The shell, sh command pattern matching (wild cards), Quoting redirection (pg.69-93).

TEXT BOOKS:

1. AnnuragSeetha, Introductions to Computers and information Technology, RAM Prasad & Sons, Bhopal (UNIT-1)
2. Rajeev Mathur, Learning Window98 step by step, BPB Publication. (UNIT-II)
3. SumitabhDas, UNIX: Concepts & Applications, Tata McGraw Hill 1998 (UNIT-III, IV, V)

REFECENCE BOOKS-

1. Rajiv Mathur, Quick Reference DOS 6.2 Galagotia Publication.
2. Alan Simpsor, Easy Guide to Windows, BPB.
3. Vishnu Priya Singh & Meenakshi Singh, Windows 95, Asian Publishers.

BCA-103: PC PACKAGE

Max. Marks-70,
Min. Marks – 28

UNIT-I

MS Windows: Introduction to MS Windows, Features of Windows, Various versions of Windows & its use, Working with Windows, My Computer & Recycle bin , Desktop, Icons and Windows Explorer, Screen description & working styles of Windows, Dialog Boxes & Toolbars, Working with Files & Folders, Operations on Files and Folders, Shortcuts & Auto starts, Accessories and Windows Settings, **Using Control Panel-** Setting common devices using control panel, creating users, internet settings, Start button & Program lists, Installing and Uninstalling new Hardware & Software program on your computer.

UNIT-II

Office Packages: Office activates and their software requirements, Word processing, Spreadsheet, Presentation graphics, Database, introduction and comparison of various office suites like MS-Office, Lotus-Office, Star-Office, Open-Office, MS Word Basics- Features & area of use. Working with MS Word, Menus & Commands, Toolbars & Buttons, Shortcut Menus, Wizards & Templates, Creating a New Document, Different Page Views and layouts, Applying various Text Enhancements, Working with Styles, Text Attributes, Paragraph and Page Formatting, Text Editing using various features , Bullets, Numbering, Auto formatting, Printing & various print options.

UNIT-III

Advanced Features of MS Word, Spell Check, Thesaurus, Find & Replace; Headers & Footers, Inserting Page Numbers, Pictures, Files, Auto texts, Symbols, Working with Columns, Tabs & Indents, Creation & Working with Tables including conversion to and from text, Margins & Space management in Document, Adding References and Graphics, Mail Merge, Envelops & Mailing Labels. Importing and exporting to and from various formats.

UNIT-IV

MS Excel- Introduction and area of use, Working with MS Excel, concepts of Workbook & Worksheets, Using Wizards, Various Data Types, Using different features with Data, Cell and Texts, Inserting, Removing & Resizing of Columns & Rows, Working with Data & Ranges, Different Views of Worksheets, Column Freezing, Labels, Hiding, Splitting etc., Using different features with Data and Text; Use of Formulas, Calculations & Functions, Cell Formatting including Borders & Shading, Working with Different Chart Types; Printing of Workbook & Worksheets with various options.

UNIT-V

MS PowerPoint - Introduction & area of use, Working with MS PowerPoint, Creating a New Presentation, Working with Presentation, Using Wizards, Slides & it's different views, Inserting, Deleting and Copying of Slides, Working with Notes, Handouts, Columns & Lists, Adding Graphics, Sounds and Movies to a Slide, Working with PowerPoint Objects, Designing & Presentation of a Slide Show, Printing Presentations, Notes, Handouts with print options. Outlook

Express, Features and uses, Configuration and using Outlook Express for accessing e-mails in office.

TEXT & REFERENCE BOOKS:

- *WINDOWS XP COMPLETE REFERENCE. BPB PUBLICATIONS*
- *MS OFFICE XP COMPLETE BPB PUBLICATION*
- *MS WINDOWS XP HOME EDITION COMPLETE, BPB PUBLICATION.*
- *JOE HABRAKEN, MICROSOFT OFFICE 2000, 8 IN 1, BY, PRENTICE HALL OF INDIA*
- *I.T TOOLS AND APPLICATIONS, BY A. MANSOOR, PRAGYA PUBLICATIONS, MATURA*

BCA-104: PROGRAMMING IN C

Max. Marks-70,

Min. Marks - 28

UNIT-I

Introduction, Data Types and operators identifiers and keywords, constants, types of operators, type conversion, writing a C-Program, variable declaration, C-Statements, Input and Output functions (pg 1-38)

UNIT-II

Control statement, conditional expressions if statement, if-else statement, case and switch statement, **loop-statements:** For loop, while loop, do while loop, Break, continue and go to statements (pg.39-69)

UNIT-III

Functions and program structure, Function definition, Type of functions, local and global variables, scope of variable, multifunction programs, Recursive functions. (pg.70-98)

UNIT-IV

Arrays Notation and declaration, initialization, multidimensional and character arrays, pointers, Declarations, Pointer arithmetic, pointers and functions. (pg.99-142)

UNIT-V

Preprocessors and macros, Header files (brief introductions only), structures, Declarations, initialization and use of structures in a C-Program function and structures, Array of structures Arrays within a structures. Unions. (pg.159-161, 168-169, 197-220, 230-233)

Text Book :

1. D. Ravichandran, programming in C New Age International, 1996.
2. E. Balaguruswamy, Tata McGraw Hill Pub.

Reference Books:

1. Y.Kanitkar, Let us C. BPB Publication, 4th Ed. 2002.
2. Rajiv Dharaskar, Hidden Treasure of C, BPB Publication, 1995.
3. Shridhar B. Dandin, Programming in C – Pragya Publication (Hindi Medium)

BCA-105: COMMUNICATIVE ENGLISH

Max. Marks-70,
Min. Marks – 28

UNIT-I

COMPREHENSION: Comprehension includes understanding the language by reading and listening for that some interesting current passages of poems will be given to the student Individually or in Group and they are allowed to Read in the class by giving sufficient time. Then the comprehension will be tested checked by formulations various questionnaire in different ways such as objective type, Fill in the Blanks or small answer question Similarly the passages or poems will be read out in the class and the Question shall be asked Verbally to evaluate level of Comprehension. This would be to enhance their listening capability: Listening Comprehension: Talks. Reports, Poems.

UNIT-II

SECTION: B WRITING SKILLS

In this section the student will be exposed to various Techniques of writing such as paragraph. Report composition, Diary Entry, Application and letters. This count temporary Indian writing on culturally familiar topics and would promote inferential and Analytical learning apart from literary application.

B-1 PARAGRAPH WRITING

1. Objective
2. Introduction
3. The topic sentence
4. Developing the topic
5. Coherence Transitional devices.
6. Punctuation Marks- (I) Need (II) Importance.

B-2 COMPOSITION WRITING:

1. Objective
2. Introduction
3. A Model Composition for study
4. Type of Composition
 1. Expository
 2. Argumentative
 3. Narrative
 4. Descriptive
5. Tech Techniques of writing & good composition.

UNIT-III

B-3 NOTE MAKING TALKING

1. Objective
2. Introduction
3. How to read
4. Specimen notes
5. Reduction devices
6. Heading and Subordinate points

B-4 REPORT WRITING

1. Reporting Events
2. Reporting Interviews

3. Reporting Surveys: Objective, introduction, definite stages in writing a report, types of report, key words.

UNIT-IV

B-5 APPLICATION: On given circumstances, Format of the application.

B-6 LETTER WRITING: Personal letters, Business letters, objectives, Introduction, Format of the letter, How to write effective letters.

UNIT-V

FUNCTIONAL GRAMMER: Grammar will be taught in a functional, Integrated and informal way giving stress more on. The usage rather than defining them Maximum possible exercises will be given.

CORRECT USAGE: Parts of speech, Agreement of the verb with the subject, Subject and predicate.

TRANSFORMATIONS OF SENTENCES: Interchange of Active and passive voice, Interchange of affirmative and negative sentences, Interchange of Explanative and assertive sentences, interchange of parts of Speech.

BOOK:

1. English Grammar by Wren & Martin
2. The Most Common Mistakes in English Usage the Addition by ThomsEllat.

BCA SECOND SEMSETER

BCA-II SEM					
Course Code	Subject Name	Theory Paper Marks	Internal Evolution 50 % For Unit Test 50% for Attendance	Practical exams	Total Marks
BCA-201	Computer System Architecture	70	30		100
BCA-202	Internet Concept & Web Design	70	30		100
BCA-203	Object Oriented Programming with C++	70	30		100
BCA-204	Data Base Management System	70	30		100
BCA-205	System Analysis & Design and MIS	70	30		100
BCA-206	Computer Lab-II (HTML, JavaScript, C++)			100	100
Total Marks					600
Minimum Passing marks in Theory : 40 % and Practical : 50%					

BCA-201: COMPUTER SYSTEM ARCHITERCTURE

Max. Marks-70,
Min. Marks – 28

UNIT-I

DATA REPRESENTATION- Data types, Number Systems: Binary number system, Octal & Hexa–Decimal Number system. **Fixed-Point Representation:** Is & 2s complement, Binary fixed-point representation. Arithmetic operation on binary numbers, overflow & underflow.

UNIT-II

DIGITAL LOGIC CTRCUITS: Logic gates, AND,OR,NOT,GATE& their truth tables, NOR NAND & XOR gates. **BOOLEAN ALGEBRA** :Demorgan's theorem.**MAP STMPLOCATION:** Minimization techniques, X, Map. Sum of product & product of sums.**COMBINATIONAL & SEQUENTIAL CIRCUITS:** Half address full address, full subtractor, Flip-Flops-RS, & T Flip-Flops, Shift registers RAM AND ROM.

UNIT-III

CPU ORGANTSATIONS- ALU & CONTROL CIRCUIT: Idea about arithmetic circuit program control, Instruction sequencing. **INTRODUCTION TO MICROPROCESSOR:**Microprocessor Architecture (3086), System buses, Register, program counter, Block diagram of a Micro Computer System. Microprocessor control signals, Interfacing devices. **INTROCUTION TO MOTHER BOARD:** Idea about different cards and their functions, SMPS.

UNIT-IV

INPUT-OUTPUT ORHANTSATION: I/O interface, properties of Simple I/O Devices and their

controller, Isolated versus memory-mapped I/O, Modes of Data Transfer, Synchronous & A synchronous Data Transfer Handshaking, Asynchronous serial transfer, I/O processor.

UNIT-V

MEMORY ORGANISATION : Auxiliary memory, Magnetic drum, Disk & Tape Semi conductor memories, Memory Hierarchy, Associative memory, Virtual memory, Address space & memory space, Address Mapping, Page table, Page replacement, Cache memory, Hit Ratio, Mapping techniques, Writing into cache.

TEXT BOOK :

Computer System Architecture by : M. MORRIES MANO

NOTE : There shall be ten question in the questions paper, two questions from each unit. The student will have to attempt five questions selecting one question from each unit.

BCA-202: INTERNET CONCEPTS AND WEB DESIGN

Max. Marks-70,

Min. Marks-28

UNIT I

Overview of Internet: Introduction to Internet and WWW, Growth of Internet, Owners of the Internet, Anatomy of Internet, ARPANET, Internet history, Concept of Networking, Brief introduction to Networking models (OSI,TCP/IP), Packet switching, Internet infrastructure, Internet working, Internet protocols and services like TCP/IP, http and WWW, telnet, FTP, Usenet and newsgroup, SMTP and Electronic mail, Internet address and its format URL, domain name, Internet Tools like Web Browsers, Search Engines, Chat & Bulletin Board Services.

UNIT II

Principles and planning of Web Design: Design for the medium: craft the look and feel, portable design, design for low band width, plan for clear presentation and easy access, Design the whole site: smooth transition, grids for visual structure, active white space, Design for the user: design for interaction, location, flat hierarchy, power of hypertext linking, content decision, Design for the screen, Planning the site : site specification, identity and content goal, analyzing audience, building website development team, filename and URLs, Directory structure, diagram the site.

UNIT III

Introduction to HTML: Introduction to HTML, Elements of HTML syntax, Head and Body sections, Building HTML documents, Inserting text, images, hyperlinks, Backgrounds and Color Control, meta tags, ordered and unordered lists, Table Handling: Table layout & presentation, constructing tables in a web page, Frames: Developing Web pages using frames. Forms and its elements, special tags like COLGROUP,THEAD,TBODY, TFOOT,IFRAME,LABEL etc.

UNIT IV

Introduction to JAVASCRIPT: JavaScript variables and data types, statement and operators, control structure object-oriented programming: Functions, Executing deferred scripts, objects, Messaging in a

JavaScript: dialog boxes, Alert boxes, confirm boxes, prompt boxes, JavaScript with HTML, Events, Events Handlers, Forms, Forms array.

UNIT V

Site Navigation and Publishing of Website: Crating usable navigation, Using text based navigation: Linking with text based navigation bar, linking to individual files, linking to document/external document fragments, contextual linking, Using graphics based navigation: using text image for navigation, using icon for navigation. Website Publishing: choosing an internet service provider, buying a domain name, using FTP to upload files, Website testing: testing consideration, user testing, feedback form. Refining and updating contents, working with search engines submitting URLs to search engines.

TEXT BOOKS:

1. Joel Sklar: Principles of Web Design, Thomson Learning, Vikas Publisher.
2. Thomas A. Powell: HTML complete Refrence, TMH

REFERENCE BOOKS-:

1. The Complete Reference Web Design, Thomas A. Powell
2. Internet and Web Design, Vikas Gupta, DreamTech.
3. B Underdahle and K Underdahle, Internet and Web Page/ WebSite Design, Second Edition, 2001, IDG Books India (P) Ltd.
4. D Comer, The Internet Book, Second Edition, 2001, Prentice Hall of India.

BCA-203: OOPS AND PROGRAMMING in C ++

**Max. Marks-70,
Min. Marks - 28**

UNIT-I

PRINCIPLES OF OBJECT ORINETED PROGRAMMING: Software Crisis, Software Evaluation. A Look at procedure oriented Programming, Object-Oriented Programming Paradigm, Basis Concepts of Object-Oriented Programming, Benefits of OOP, A Simple C++ Program, C++ Statements, An example with class, Structure of C++ Program, Creating. The source File, Compiling and Linking.

UNIT-II

TOKENS EXPRESSIONS AND CONTROL STRUCTURES: Introduction, Tokens, Keywords, Identifiers Basis Data Types, User Defined Data Types, Derived Data Types Symbolic Constants, Type Compatibility, Declaration of Variables, Dynamic Initialization of V Variable, Dynamic Initialization of Variables, Reference Variables, Operators Memory Management Operators, Manipulators, Type Cast Operator, Expressions and Implicit Conversions, Operator, Overloading, Control Structures. **FUNCTION ++ :** The Main Function Prototyping, Call by Reference, Return by reference, Inline Functions, Default Arguments, const Arguments, Function Overloading, Friend and Virtual Functions.

UNIT-III

CLASSES AND OBJECTS : 'C' Structures Revisited, Specifying A class, Defining Member Functions, A C++ Program with class, making An Outside Function. Inline, Nesting of member Functions, Private member Functions, Arrays A class, Memory Allocation for Objects, Static Data Members, Static Member functions, Arrays of Objects As Function Arguments.

UNIT –IV

CONSTRUCTORS AND DESTRUCTORS : Introduction, Constructors, Parameterized Constructors, Multiple Constructors in a class with default Arguments, Dynamic Initialization of Objects, Copy Constructor, Constructors, Constructing, Two-Dimensional Arrays, Destructors.

OPERATORS OVERLOADING AND TYPE CONVERSIONS : Introduction Defining Operators Overloading Unary Operators, Overloading Binary Operators, Using Friends, Manipulation of Strings Using Operators, Rules for overloading operators, Type Conversions.

UNIT –V

INHERITANCE: EXTENDING CLASSES: Introduction Defining Derived Classes, Single Inheritance, Making A Private Member Inheritable, Multiple Inheritance, Multilevel Inheritance, Hierarchical Inheritance, Hybrid Inheritance.

POINTERS VIRTUAL FUNCTIONS AND POLYMORPHISM : Introduction, Pointers Operations, to objects, This pointer, Pointers to derived classes, virtual functions, pure Virtual Functions, Managing Console I/O Operations, C++ Streams, C++ Stream Classes, Unformatted I/O Operations, Formatted console I/O Managing Output with manipulators.

BOOKS:

1. OBJECT-ORIENTED PROGRAMMING WITH C++ By E. BALAGURUSAMY
2. OBJECT-ORIENTED PROGRAMMING WITH C++ By NABAJYOTI BABKAKATI SAMS PHI. PVT.LTD.
3. Object Oriented Prog. With ANSI & Turbo C++ by Ashok N. Kamthane (Pearson Education)
4. Insight into OOP & C++ by Ekta Gupta (Pragya Publication, Hindi Medium)

Note: There shall be Ten Questions in the question paper, Two questions from each unit. The student will have to Attempt five question, Selecting one question from each unit

BCA-204:DATA BASE MANAGEMENT SYSTEM

**Max. Marks-70,
Min. Marks - 28**

UNIT-I

DATA BASE SYSTEM: Operational Data, Why Database, Data independence, an Architecture for a Database System, DDL & DML, Data Dictionary, Data Structures and Corresponding Operators, Data Models, The Relational Approach, The Network Approach, DBMS Storage Structure and Access Methods.

UNIT-II

RELATIONAL DATA STRUCTURE: Relations Domains Attributes, Keys Extensions and Intentions, Base Tables, Indexes, System R Data Manipulation, Retrieval, Operations Built-In-Functions, Update Operations, the System R Dictionary.

UNIT-III

QUERY LANGUAGE: Embedded SQL Introduction operation Not-Involving Cursors, Operations Involving Cursors, Dynamic Statements Security & Integrity, Security Specification. In SQL Introduction Retrieval Operations Retrieval Operations on Tree-Structured Relations Built-In-Function, Update Operations, the QBL Dictionary.

UNIT-IV

RELATIONAL DATABASE DESIGN: Relational Algebra, Traditional Set Operations, Attribute Name for Derived Relations, Special Relational Operations, Relational Calculus, Type-Oriented Relational Calculus, Further Normalization. Functional Dependence, First, Second and Third Normal Forms, Relations with More than One Candidate Key, Good and Bad Decompositions, Fourth Normal form Fifth Normal Form.

UNIT-V

THE HIERARCHICAL APPROACH: The Architecture of An 'IMS System, Background, Architecture, IMS Data Structure, Physical Database, The Database Description, Hierarchical Sequence, IMS Data Manipulation, Defining the program communication Block (PCB). The LL/I Examples, Constructing the Segment search Argument, using more than one PCB.

THE NETWORK APPROACH: The architecture of a DBIG system, background, Architecture, DBIG data structure, The Set construct: Network examples, a sample scheme, Membership class, Set selection, A comparison of the Relational and Network Approaches Introduction, The conceptual Level, Some Criteria for the Conceptual Scheme. The Relational Approach.

BOOKS:

1. AN INTRODUCTION TO DATABASE SYSTEM (3rd ED.) By : C.J.DATE.
2. DATABASE SYSTEMN CONCEPTS (2nd ED.) By : C.J. DATE.
3. AN INTRODUCTION TO DATABASE SYSTEM By : BIPIN C. DESAI.

Note:There Shall be Ten Questions in the question paper, Two questions from each unit. The student will have to Attempt five question, Selecting one question from each unit.

BCA-205:SYSTEM ANALYSIS & DESIGN AND MIS

**Max. Marks-70,
Min. Marks - 28**

UNIT-I

The System Concept : Definition, Characteristics of a system : Organization, Interaction, Interdependence, Integration, Central Objective, Elements of a system and Types of Systems : Physical or Abstract System, Open or Closed Systems, Man-made Information Systems, The System Development Life Cycle, Considerations for candidate systems, Prototyping. The Role of System Analyst.

UNIT-II

System Planning and Initial Investigation, Information gathering tools, System Analysis, The tools of System Analysis (DFD, Data Dictionary, Decision Tree and Structured English), System Performance definition, Description of outputs, Steps in feasibility analysis, Feasibility Report, Cost/Benefit Analysis : Data Analysis, Cost/Benefit Analysis, The system proposal.

UNIT-III

System Design: Logical and Physical design methods, **Design Methodology:** Structured Design, Form-Driven Methodology – HIOP and IPO Charts, Structured walkthrough, processing controls and data validation **System Testing:** Why System Testing, What do we test for, The Test Plan, Trends in Testing, **Implementation and Software Maintenance:** Conversion-Combating re resistance to change, post implementation review, software maintenance.

UNIT-IV

Management Information System : Introduction, what is MIS, characteristics of an MIS, the primary function, the MIS through the organization, a system of users and machine, Reporting capabilities- Principles of reporting'. Summarization of information, Report presentation mode, Types of Reports, Need for an MIS – Pitfalls in designing an MIS, Designing an effective MIS-Data Banks/Bases, determinants of value of information, Uses of Information- Users of Information within the organization, Users of information, Outside the Organization Function Reporting System, Characteristics of information flow.

UNIT-V

Managing the MIS Department-Placement of the MIS department, Organization of MIS department Centralization Vs Decentralization, **Decision Support System :** Introduction, Level of Decision Making, Types of Decision – Unstructured Decision, Structured Decision Support System, Semi-structured Decision, What are Decision Support System, Types of Decision Support System, Impact of Decision Support System, Why do managers need Decision Support System, Examples of Decision Support System.

TEXT BOOKS:

1. Elias M. Awad, System Analysis and Design, Galgotia Publication- 2nd Edition (2001) (Unit – 1,2,3)
2. S. K. Basandra, Computers Today, Galgotia Publication- 1st Edition (1999) (Unit 4-5)
3. A. Mansoor , System analysis & Design, Pragma Publication (Hindi Medium)

REFERENCE BOOKS :

1. V.K. Kapoor, Introduction to Computer Data Processing & System Analysis, Pub. Sultan Chand & Sons, 1st Edition (1989)
2. G.B. DAVIS & M.H. Olson, Management Information System, Data McGraw- Hill 2nd Edition (2000)

Note : There Shall be Ten Questions in the question paper, Two questions from each unit. The student will have to Attempt five question, Selecting one question from each unit.

BCA THIRD SEMESTER

BCA-III SEM					
Course Code	Subject Name	Theory Paper Marks	Internal Evolution 50 % For Unit test 50% for Attendance	Practical exams	Total Marks
BCA-301	Cyber Security	70	30		100
BCA-302	Data Structure & Algorithms	70	30		100
BCA-303	Mathematical Foundation	70	30		100
BCA-304	R. D. B. M. S. (ORACLE)	70	30		100
BCA-305	Computer Lab-III-A (Practical In DS)			100	100
BCA-306	Computer Lab-II (Practical in SQL and PL/SQL &)			100	100
Total Marks					600
Minimum Passing marks in Theory : 40 % and Practical : 50%					

BCA-301: CYBER SECURITY

Max. Marks-70
Min. Marks - 28

UNIT-I

Basics of Communication Systems, Transmission Media , ISO/OSI and TCP/IP Protocol Stacks, Local Area Networks, Wide Area Networks, Internetworking, Packet Formats, Wireless Networks , The Internet

UNIT-II

Security principles, threats and attack techniques, Introduction to security, Information, security, Security triad: Confidential, Integrity, Availability, Focus of control, Security threats and attacks, Security management, Authentication and access control Identification, Authentication: Authentication by passwords, Protecting passwords, Access control structures, Types of access control

UNIT-III

Cryptography, Cryptographic mechanisms, Digital signatures, Encryption, Certificates Lattice and reference monitors, Security levels and categories, Lattice diagram, Reference monitors, Security kernel, Hardware security features, Protecting memory

UNIT-IV

Security models, Chinese wall model, Bell-La Padula, Biba, Non-deducibility, Non-interference, Other models, Network security, Protocol design principles, ISO architecture, IP security, SSL/TLS, Firewalls, Intrusion detection

UNIT-V

Unix security and Windows security, Subjects, objects and access control software security and database security, Memory management, Data and code, Relational databases Access control in databases, Statistical database security , General security principles, Access components, Access decisions, Administration and management issues

REFERENCES:

1. Computer Security, 2nd. ed.

Author: Dieter Gollmann

Publisher: John Wiley & Sons, 2006

ISBN: 0-470-86293-9

2. Security in Computing, Fourth Edition

Author: Charles P. Pfleeger ,Shari Lawrence

Publisher: **Pearson India**

3. Cryptography and Network Security

Principles and Practices 3rd. ed.

Author:William Stallings

Pearson Education

BCA-302:DATA STRUCTURE& ALGORITHMS

Max. Marks-70,

Min. Marks - 28

UNIT-I

INTRODUCTION TO DATA STRUCTURE: The concept of Data structure, Abstract Data structure. Analysis of Algorithm, The concept of List.**STACKS AND QUEUES:** Introduction to stacks & primitive operations on stack, Stack as an abstract Data type, Multiple stack, **Stacks Applications :** Infix, Post Fix, prefix and recursion, Introduction to queues, primitive operation on the queues, Queue as abstract Data type, Circular queue, Dequeue, Priority queue.,

UNIT-II

LIMKED LIST: Introduction to the linked list of stacks, The linked list of queue, Header nodes, Doubly linked list, Circular linked list, Stacks and queues as a circular linked list, Application of linked list.

UNIT-III

TREES: Basic terminology, Binary trees, Tree representations as array & linked list Binary tree representations, Traversal of binary trees; in order, Preorder & Post order, Application of binary trees. Threaded binary tree. B-tree & Height balanced tree, Binary tree representation of trees, Counting binary trees.

UNIT-IV

SEARCHING SORTING: Searching, Binary Searching, Insertion sort Selection. Quick Sort, Bubble sort, Heap Sort, Comparison of sorting methods.

UNIT-V

TABLES & GRAPHS: Hash table, Collision resolution techniques, Introduction to graph definition, Terminology, Directed undirected & weighted graph, Representation of graphs, Graph traversals: Depth first & Breadth. First search, Spanning trees, Minimum spanning tree Application of graphs.

TEXT BOOKS :

1. FUNDAMENTAL OF DATA STRUCTURE: By S. Shahney & E. Horowitch
2. DATA STRUCTURE: By Trembly & Sorrenson.
3. DATA STRUCTURE USING : PASCAL : By Trannenbaum & Augenstein.
4. DATA STRUCTURE : By Lipschuists
(Scheme's Outline Series McGraw Hill Publication)
5. Introduction to Data Structure by Shridhar B. Dandin – Pragya Publication (Hindi Medium)

NOTE: There shall be ten question in the questions paper, two questions from each unit. The student will have to attempt five questions selecting one question from each unit.

BCA-303: MATHEMATICAL FOUNDATION

**Max. Marks-70,
Min. Marks - 28**

UNIT-I

Boolean Algebra: Principle of Duality, Properties of Boolean Algebra, Inclusion Relation in Boolean Algebra Boolean Sub algebra, Partial, Order Relations, Lower and Upper Bound Total order, Algebra of Propositions **ALGEBRA OF ELECTRIC CIRCUITS:** Switching Circuits Design of Simple Automatic Control System, **Boolean Function of Fundamental Forms:** Minimal Boolean Functions, Disjunctive Normal Form, Bool's Expansion Theorem, Conjunctive Normal Form, Logic Circuits Many Terminal Network, Some Definitions Related to Graph, Tree.

UNIT-II

SET & OPERATIONS ON SETS : Union, Intersection, Dis joint Sets, Difference, Symmetric Difference, Complement Laws of Operations on Sets, Venn Diagram, Generalized De Morgan's Laws, Generalized Form of Distributive Laws. **CARTESIAN PRODUCT OF SETS AND RELATIONS:** Cartesian product of two sets Relation, Binary relation, Equip Equivalence relation. Equivalence classes of equivalence sets. Properties of equivalence classes, Partition of a set. Function or mapping kinds of mapping. Some special types of mapping, Inverse function or Inverse mapping, Binary operations, Types of binary operations, Countable sets.

UNIT-III

ELEMENTARY DIFFERENTIATION :Complex numbers, Brief description of algebraic properties of complex numbers. Argand plane and polar representation of complex numbers.Statement of Fundamental Theorem of Algebra, solution of quadratic equations in the complex number system.Fundamental principle of counting. Factorial n . $(n!)$,Permutations and combinations,.

UNIT-IV

ELEMENTARY INTEGRATION :Sequence and Series. Arithmetic progression (A. P.). arithmetic mean (A.M.)Geometric progression (G.P.), general term of a G.P sum of n terms of a G.P., geometric mean (G.M.), relation between A.M. and G.M. Sum to n terms of the special series Σn , Σn^2 and Σn^3 .

UNIT-V

Graph Theory:Definition and type of Graphs, Incidences and degree of vertices, Isomorphism of graphs, connected and disconnected graphs, walks, paths and circuits,. Directed graph , tree centre of tree, Binary Tree elementary results(properties or theorems) of graphs, connected graphs and trees(without proof)

BOOKS:

1. A Text books of Discrete Mathematics by D.C. Agrawal, Thakur &Shrivastava.
2. A Text books of Elementary calculus By D.C. Agrawal, Thakur &Harikishan.
3. A Text Book of Vector Calculus &Geometry By D.C. Agrawal.
4. A Text Book of Discrete Mathematics By Thakur & Sharma.
5. Calculus : By Thakur &Harikishan.
6. Differential Calculus : BY Gorakh Prasad.

Note : The shall be ten question in the question paper two question from each unit. The students will have to attempt five question, selecting one questions from each unit.

BCA-304: RDBMS (ORACLE)

**Max. Marks-70,
Min. Marks - 28**

UNIT-I

Oracle product details, Overview of oracle architecture Oracle files, System and User process, OracleMemory, System data base object, Oracle Data types.

UNIT-II

Working with Tables. Data Constraints, Select Command, Oracle Operator, Range Searching, Pattern Matching, Oracle Built In Function Grouping data from Tables in SQL, Manipulation Data in SQL, Joining Multiple Tables ,Sub queries.

UNIT-III

Oracle Security –Privileges., Creating view, Granting Permissions, - Updating, Selection, Destroying view Creating Indexes. Creating and Managing, Working with Sequences.

UNIT-IV

PL/SQL Introduction, Data type support in PL/SQL, Conditional Statements, Using DML Within PL/SQL,Procedures & Functions, Cursors, Parameterized Cursor.

UNIT-V

Exception handling in PL/SQL, Triggers - Concept, use, how to apply database triggers, type of triggers, Syntax, deleting.

TEXT & REFERENCE BOOKS:

- *IVAN BAYP'OS.C, 'SQL. PL/SQL", BPB PUBLICATIONS"*
- *LIEBSCHUTY.'THE ORACLE COOKBOOK", BPB PUBLICATION*
- *MICHAEL ABBEY, MICHAEL JCOREY, 'ORACLE A BEGINNERS*
- *GUIDE". TMHPUBLICATION*
- *ORACL DATA BASE 11 G SATISH ASNANI PHI LEARNING*

BCA FOURTH SEMESTER

BCA-IV SEM					
Course Code	Subject Name	Theory Paper marks	Internal Evolution 50 % For Unit test 50% for Attendance	Practical exams	Total Marks
BCA-401	Programming in VB.Net	70	30		100
BCA-402	Theory of Operating System	70	30		100
BCA-403	Software Engineering	70	30		100
BCA-404	Numerical Methods & Analysis	70	30		100
BCA-405	Computer Lab-III-A (Practical In VB.net)			100	100
BCA-406	Minor Project			100	100
Total Marks					600
Minimum Passing marks in Theory : 40 % and Practical : 50%					

BCA-401: PROGRAMMING IN VB.NET

**Max. Marks-70,
Min. Marks - 28**

UNIT-I

Introduction to .NET, .Net Features, CLR, MSIL, Assemblies and Class Libraries, Introduction to Visual Studio, Project Basics, Type of Projects in .Net, IDE of VB.Net, Menu Bar, Tool Bar, Solution Explorer, Toolbox, Properties Window, Form Designer, Output Window, Object Browser.
The Environment: Editor Tab, Format Tab, General Tab, Docking Tab, Visual Development & event Driven Programming- Methods and Events.

UNIT-II

The VB.Net Language-Variables, Declaring Variables, Data type of Variables, Variables Declaration, Scope & Life Time of a variables, Constant, Arrays, Types of Arrays, Control Array, Collections, Subroutines, Functions, Passing variable number of Argument , Optional Argument, Returning value from functions.

Control Flow statements: Conditional statement, Loop statement, MSGBOX & Input Box.

UNIT-III

Working with Forms: Loading, showing and hiding forms, Controlling One from within another.

GUI Programming with Windows Form: Text Box, Label, Button, List Box, Combo Box, Checkbox, Picture box, Radio Button, Panel, Scroll bar, Timer, List view, Tree view, Tool bar, Status Bar there properties, Methods and Events, Open File Dialog, Save FileDialog, FontDialog, Color Dialog, Print Dialog, Link Label.

Designing Menus: Context Menu, Access & Shortcut Keys.

UNIT-IV

Object Oriented Programming, Classes and Objects, Fields Properties, Methods and Events, Constructor, Inheritance, Access Specified: Public, Private, Protected, Overloading, My Base & My Class Keywords. Overview of OLE, Accessing the WIN32 API from VB.Net, CO Methodology, advantage of COM+, COM & .Net, Create User Control, Register user Control, Access com components in .net application.

UNIT-V

Database programming with ADO.Net-Overview of ADO, from ADO to ADO.Net, Accessing Data using Server Explorer, Creating Connections, Command, Data Adapter and Data Set with OLEDB and SQLDB. Display Data on data bound, Display data on data grid.

TEXT & REFERENCE BOOKS:

1. VB.net Programming Black Box by Steven Holzner- Dreamtech Publication
2. Mastering VB.Net by Evangelos Petroustos- BPB Publication.
3. Introduction to .Net Frame Work – Wrox Publication.
4. MSDN.MiroSoft.Com/Net
5. WWW.Gotdotnet.Com
6. VB.Net Programming , Pragma Publication (Hindi Medium)

BCA-402: THEORY OF OPERATING SYSTEM

**Max. Marks-70,
Min. Marks - 28**

UNIT-I

OPERATING SYSTEM BASICS :Definition, Simple Batch Systems, Multi Programmed Batched Systems, Time – Sharing Systems, Personal Computer Systems, Parallel Systems, Distributed Systems, Real-Time Systems, Systems Components, Operating Systems Services, Systems, Calls, Systems, Programs, Systems Structure, Virtual Machine, Systems, Design and Implementation, Systems Generation.

UNIT-II

PROCESS MANAGEMENT:Process Concept, Process Scheduling, Operation on Processes, Operation Processes, Threads, Enterprises Communication, Basic Concepts, Scheduling Criteria, Scheduling Algorithms, Multiple-Processor Scheduling, Real-Time Scheduling, Algorithm Evaluation.

UNIT-III

PROCESS SYNCHRONIZATION:Background, The Critical Section Problem, Synchronization Hardware, Semaphores, Classical Problem of Synchronization, Hardware, Semaphores, Classical Problem of Synchronization, Monitors, Synchronization in Solaris 2, Atomic Transactions, System Model, Deadlock Characterization, Methods for handling Deadlocks, Deadlock, Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock, Combined Approach to Deadlock.

UNIT-IV

STORAGE MANAGEMENT : Background, Logical Versus Physical Address Space, Swapping, Contiguous Allocation Paging Segmentation, Segmentation with Paging Virtual Memory, Demand Paging Performance of Demand Paging Page Replacement, Page- Replacements Algorithms, Allocation

of Frames, Inrushing, Other Considerations, Demand Segmentation.

UNIT-V

FILE SYSTEM INTERFACE:File Concept, Access Methods, Director Structure, Protection, Consistency Semantics, File systems Structure, Allocation Methods, Free- Space Management, Directory Implementation, Efficiency and Performance, Recovery.

I/O SYSTEMS:Overview, I/O Hardware, Application I/O Interface I/O Subsystem, Transforming I/O Requests to Hardware Operations, Performance, Disk Structure, Disk Scheduling, Swap-Space Management, Disk Reliability, Stable-Storage Implementation.

TEXT & REFERENCE BOOKS:

1. OPERATING SYSTEM CONCEPTS By SILBERCHATZ &GALVIN.

2. Operating System ByGaurav Sharma (Pragya Publication- Hindi Medium)

Note : There Shall be Ten Questions in the question paper, Two questions from each unit. The student will have to Attempt five question, Selecting one question from each unit.

BCC-403 SOFTWARE ENGINEERING

Max. Marks70
Min. Marks-28

UNIT-I

Software Processes: Processes projects and products, Component software processes, characteristics of a software process, software Development Process, project management process, software configuration management process, software configuration management process, process management process. Software requirement Analysis and Specification: Software requirement, need for SRS, requirement process, problem analysis, analysis issues. Informal approach, structured analysis, object oriented modeling, other modeling approaches, prototyping, requirement specification, characteristics of an SRS, component of an SRS, specification languages, structure of requirement document validation requirement reviews, other method metrics, size measures, quality metrics.

UNIT-II

Planning Software Project:- Cost estimation, uncertainties in cost estimation, building cost estimation models, on size estimation, COCOMO model, project scheduling, average duration estimation, project scheduling and milestones, staffing and personnel planning, rayleigh curve, personnel plan, team structure, software configuration management plans, quality assurance plans, verification and validation, project monitoring plans, risk management.

UNIT-III

Function Oriented Design:- Design principles, coupling, cohesion, design notation and specification, structured design methodology, verification, network metrics, stability metrics, information flow metrics
Software Testing.

UNIT-IV

Testing Methods : Software testing fundamentals, test case design, white box testing, control structure testing, black-box testing, testing for specialized environments. Software Testing Strategies: A Strategic Approach to software testing, strategic issues, unit testing, validation testing, system testing, the art of debugging.

UNIT-V

Re-Engineering : Software re-engineering, software maintenance, a software reengineering process model, reverse engineering, reverse engineering user interfaces, restructuring, code restructuring, data restructuring, forward engineering the economics of reengineering. Client/Server software Engineering: The structure of client/server systems, software engineering for c/s systems, analysis modeling issues, design for C/S systems, testing issues. Computer-Aided software Engineering: What is case, building blocks for case, a taxonomy of case tools, integrated case environments, the integration architecture, the case repository.

TEXT BOOKS:

1. Presman Roger, Software, Engineering: A Practitioner's Approach Tata McGraw Hill, New Delhi.
2. JalotePankaj, An Integrated Approach to Software Engineering Narosa, New Delhi.

REFERENCE BOOKS:

1. R.E. Fairly. Software Engineering Concepts.McGraw Hill, Inc 1985.
2. Poyce, Software Project Management, Addison-Wesly.
3. Sommerville , Software Engineering, Addison-Wesly.

BCA-404:NUMERICAL METHODS & ANALYSIS

Max. Marks-70,
Min. Marks - 28

UNIT-I

COMPUTER ARITHMETIC: Binary number system. Octal & Hexadecimal system, Floating point Arithmetic, Transcendental and polynomial equations, Direct & Indirect methods, fixed point Iteration methods, Regula-Falsi method.

UNIT-II

MATRICES HERMITIAN SKEW : Hermitian & Symmetric matrices Elementary Transformations, Elementary matrices, Determinant & Inverse of a matrix Rank and Nullity of matrices and solutions of Non-Homogeneous linear-equations, Characteristic roots, Cayley-Hamilton theorem.

UNIT-III

SYSTEM OF LINEAR ALGEBRAIC EQUATIONS: Gaussian (LU) Decomposition of Matrix, Gauss Elimination methods, Consistent and inconsistent, System of equations Jacobi iteration method, Gauss-Seidel iteration method index of convergence.

UNIT-IV

INTRODUCTION AND APPROXIMATION: Newton Interpolation formula and Newton Backward interpolation formula, Error in Newton interpolation formula, Lagrange interpolation formula Newton's divided difference interpolation formula.

UNIT-V

NUMERICAL DIFFERENTIATION AND INTEGRATION: Methods based on interpolation methods based on finite differences operators Newton's method Trapezoidal rule and Simpson's rule.

BOOKS :

1. M.K.JAIN, S.R.K. IYENGAR and R.K.JAIN, NUMERICAL METHODS FOR SCIENTIFIC AND ENGINEERING COMPUTATIONS THIRD EDITION EASTERN Ltd. 1993.
2. NUMERICAL ALGORITHMS BY E.V. KRISHNAMURTHY and S.K.SEN EAST-WEST PARS Ltd. 1986.
3. DISCRETE MATHEMATICS – D.C. AGARWAL, H.K. PATHAK. 1986

NOTE : There shall be ten questions in the question paper, two questions from each unit. The student will have to attempt five questions selecting one question from each unit.

BCA-501: COMPUTER NETWORKS

Max. Marks-70,
Min. Marks - 28

UNIT-I

Needs and Advantages – Network, Types-server based, peer, Hybrid Server Types Network Topology – Bus, Star, Ring, Star bus, Star ring, Mesh, Network Protocols Hardware protocol, Software protocols, Selecting and designing the network for an organization.

UNIT-II

Signal Transmission-Digital signaling, Analog. Signaling Bit synchronization, Baseboard and Broadband transmission, Network Media types – properties & specialties, comparative study, Network adapters working principals configuration and selection.

UNIT-III

OSL, IEEE 802 AND TCP/IP model, Comparison between CSI & TCP/IP, Ethernet working principal, 10 & 100 MBPS Ethernet, Token Ring-working principal, cabling, Hubs, FDDI, Apple talk & ARC networking and their components, Network Scaling- No of computers, distance, software, speed Special Acquirements.

UNIT-IV

Networking Technologies – Fiber Channel, ATM, Network connectivity – Hubs, reprinters, Bridges, Multiplexers, Internet connectivity – Routers and Routers, gateways, CSUs/DSUs.

UNIT-V

Various Sever & Clients Hardware & Software. Overview of Internet: Internet & TCP/IP, Internet addressing, Concepts of ISP, Concept of URL addresses, Hypertext Concepts & WWW,FTP,NNTP, Email, SMTP. Internet security: Internet security issues, Embedded & software based firewall, Data Encryption Digital Signatures.

TEXT BOOKS :

1. James Chilies Charles Perkins, Mathew Suede, Networking Essentials : Study Guide MCSF, Second Edition, BPB Publications(Unit-I,II,III,IV,V)
2. Padma J. Bonde, “Web Technology & Internet”, Publication NakodaShikshaSahitya Publication (Indore) First Edition – 2003(Unit-V)
3. A.S.Tanenbaum, “Computer Network”. PHI-3rd Edition (2001) (Unit-III)

REFERENCE BOOKS :

1. S.K.Basandra&S.Jaiswal, “Local Area Networks”, Galgotia Publications.
2. William Stallings, “Data and Computer Communication”

BCA-502 PROGRAMMING IN JAVA

Max. Marks-70,
Min. Marks - 28

UNIT-I

JAVA EVOLUTION: Java History, Java features. How Java differs from C and C++ Java and internet, Java and World Wide Web. Hardware and software requirements, Java support systems Java environment.

OVERVIEW OF JAVA LANGUAGE : Introduction, Simple Java program, Memory Java in application with two classes, Java program structure, Java statements, Implementing a Java program, Java virtual machine, Command Line arguments, Programming style, Constants & Variables, Data types, Declaration of variables, Giving values to variables. Scope of variable, Symbolic constants, type casting getting values of variables, standard default values, Arithmetic operators, relational operators, Logical operators, Assignment operators, Increment and decrement operators, Conditional operators. Bitwise operators, Special operators, Arithmetic Expressions. Evaluation of expressions. Precedence of arithmetic operators. Type conversions in expression. Operators Precedence and Associativity, mathematical functions.

UNIT-II

DECISION AND BRANCHING : Decision making with statement simple if statement. The Else statement. Nesting of if Else statement. The Else if ladder. The switch statement. The ? Operators. The while statement, the Do statement. The for statement Jumps in loops, labeled loops.

UNIT-III

CLASSES OBJECTS AND METHODS : Defining a class, adding variable and methods, creating objects, Accessing class members, Constructors, Methods overloading, Static members, Nesting of methods, inheritance extending a class, overriding methods, Final Classes, Finalizer methods, Abstract methods and classes, Visibility control.

ARRAYS STRINGS AND VECTORS : Array one dimensional arrays, Creating an array, Two dimensional arrays, strings, Vectors, wrapper classes, Defining interfaces. Extending interfaces. Implementing interfaces, Accessing interfaces variables, System packages, Using system package, Naming conventions, creating packages, Accessing package, Using a package, Adding a class to a package, Hiding classes.

UNIT-IV

MULTITHREAD PROGRAMMING : Creating threads, Extending the thread class, stopping and blocking a thread, life cycle of a thread. Using thread Methods. Thread exception, Thread priority, Synchronization, Implementing the runnable interface.

UNIT-V

APPLET PROGRAMMING : Local and remote applets, How applets differ from applications, preparing to write Applets, Building, applet code, applet life cycle, Creating an Executable applet, Designing a web page, Applets tag.

Adding applets to HTML File, Running the applet, More about applets tags, passing parameters to applets, Aligning the display, More about HTML tags, Displaying Numerical values, Setting input from the User.

BOOKS :

1. Programming With Java A primer By : E. Balagruswamy.
2. Peter Nortons Guide To Java Programming By :Techmedia Publication.

NOTE : There shall be ten question in the questions paper, two questions from each unit. The student will have to attempt five questions selecting one question from each unit.

BCA-503: DATA MINING

**Max. Marks-70,
Min. Marks - 28**

UNIT-I

Introduction to Data Mining:Basic concepts in data mining, data measurement, exploratory data analysis, data visualization, **Basic Principles of Data Mining:** predictive modelling: classification and regression, model fitting as optimization, evaluation of predictive performance, overfitting, regularization **Other data mining tasks:** clustering and pattern detection

UNIT-II

Text Mining: information retrieval and search, text classification, unsupervised learning. **Recommender Systems:** recommender data, Netflix prize data, nearest neighbor algorithms, matrix decomposition algorithms, efficient algorithms for large data sets, modeling systematic effects

UNIT-III

Web Data Analysis:Web data: collection and interpretation, analyzing user browsing behaviour, learning from click through data, predictive modeling and online advertising, link analysis and the Page Rank algorithm

UNIT-IV

Social Network Analysis:descriptive analysis of social networks, network embedding and latent space models, network data over time: dynamics and event-based networks, link prediction.

UNIT-V

Neural networks, learning curves, and performance optimization: Simple neural networks, Multilayer Perceptrons, Learning curves, Meta-learners for performance optimization, ARFF and XRF.

TEXT BOOKS:

1. Introduction to Data Mining: By Pang-Ning Tan, Michael Steinbach, Vipin Kumar
2. Data Mining Concept and Technique: By Jiawei Han, Jian Pei.
3. Arun K. Pujari, "Data Mining Techniques" Universities Press
4. Pieter Adriaans, DolfZantinge, "Data-Mining", Pearson Education

BCA-504: PROGRAMMING WITH ASP.NET

Max. Marks-70,

Min. Marks - 28

UNIT-I

HTML – CONCEPT Of Hypertext, Versions of HTML, elements of HTML, Head & Body Sections, Building of HTML documents, Inserting text, Images, Hyperlinks, Background & Colour controls, Different HTML tags, Table layout and presentation, Use of font size and attributes. List types and its tags, Use of Frames and Forms in web pages, ASP & html FORMS.

UNIT-II

Overview of Dynamic web pages, Introduction & features of ASP.NET, Understanding ASP.NET Controls, Applications, Web Servers, Installation of IIS. Web forms , Web form controls-server controls, client controls. Adding controls to a web form, Buttons, Text box, Labels, Check box, Radio Buttons, List box, Adding controls at run time, Running a web application, Creating a multiform web project.**Form Validation:** Client side validation, server side validation, **Validation Control:**Required Field Comparison Range, Calendar Control, Ad rotator Control, Internet Explorer Control.

UNIT-III

Overview of ADO.NET, from ADO to ADO.NET, ADO.NET Architecture, Accessing Data using Data Adapter and Datasets, using command and data reader, binding data to data bind controls, displaying data in data grid. XML in .NET, XML basics, attributes, fundamental XML classes, Document, text writer, text reader, XML Validations, XML in ADO.NET, The XML Data Document.

UNIT-IV

Web Services: Introduction, State Management- View State, Session State, Application State.SOAP, Web service description language, building and consuming a web service.Web Application deployment Caching.Threading concepts, Creating threads in .NET, managing threads, Thread Synchronization.Security features of .NET, Role based security and Code access security, permissions.

UNIT-V

Overview of C# and.NET, similarities and differences from JAVA, Structure of C# program.Language features: Type system, boxing and unboxing, flow controls, classes, interfaces, Serializations and Persistence, Serializing an object, Desterilizing an object. Delegates, Reflection.

TEXTBOOKS:-

1. The Complete Reference ASP.NET By Mathew Macdonald-TMH.
2. Professional ASP.NET – Wropx Publication.
3. VB.NET Programming Black Box by Steven Holzer- Dreamtech Publication.
4. Introduction to .NET framework – Wrox publication.
5. ASP.NET Unleashed.
6. C# programming- Wrox Publication
7. C# programming Black Box by Matt telles- Dreamtech Publication.
8. Learn HTML in a weekend by Steven E Callihan PHI.
9. using HTML by Lee Anne Phillips ,PHI.
10. Learn ASP.NET- Prayga Publications (Hindi Medium)

BCA SIXTH SEMESTER

BCA-VI SEM					
Course Code	Subject Name	Theory Paper Marks	Internal Evolution 50% for Unit test 50% for Attendance	Practical exams	Total Marks
BCA-601	PHP & MYSQL	70	30		100
BCA-602	Cloud Computing	70	30		100
BCA-604	Major project Dissertation			200	200
BCA-605	Viva Voce			100	100
Total Marks					500
Minimum Passing marks in Theory : 40 % and Practical : 50%					

BCA-601: PHP and MySQL

Max. Marks-70
Min. Marks – 28

UNIT-I

Introduction to PHP: History of PHP, Versions of PHP, Features of PHP, Advantages of PHP over Other Scripting Languages, Installation and Configuration of PHP, Data Types in PHP, PHP Syntax, Comments, PHP Variables and Constants, Scope of Variables, PHP String, String Manipulation, PHP Operators, Precedence of Operators, Expressions, Creating a PHP Script, Running a PHP Script.

UNIT-II

Basic HTML Embedding PHP in HTML, Passing Information between Pages, PHP \$_GET, PHP \$_POST, PHP Conditional Statements, PHP Looping Statements, Break, Continue, Exit, **PHP Functions:** Built-in and User Defined Function, Regular Expression Functions, Mathematical, Date and Time Functions,

PHP Arrays: Creating Array and Accessing Array Elements,

UNIT-III

PHP File Permissions, Working with Files: Opening, Closing, Reading, Writing a File; **Working with Directory:** Creating, Deleting, Changing a Directory;

Working with Forms: Introduction to a Web Form, Processing a Web Form, Validating a Web Form, Input Validation, PHP with Client Side Scripting Language, Exception and Error Handling in PHP, Introduction to Cookies and Session Handling,

UNIT-IV

Working with Database: PHP-Supported Databases;

Using PHP & My SQL: Installation and Configuration of My SQL on Windows, Checking Configuration, Connecting to Database, Selecting a Database, Adding Table and Altering Table in a Database, Inserting, Deleting and Modifying Data in a Table, Retrieving Data, Performing Queries, Processing Result Sets,

UNIT-V

Code Re-use, require(), include(), and the include path, File System Functions and File Input and Output, File Uploads, Use of CSS, Introduction to Object Oriented Programming with PHP, Installing and Configuring Apache to use PHP on Windows, php.ini File,

TEXT & REFERENCE BOOKS:

1. PHP & MY SQL, BY VIKRAM VASWANI, TMH PUBLICATIONS
2. PHP ESSENTIALS, BY JULIE C. MELONI, BPB PUBLICATIONS
3. PHP 5 AND MY SQL BIBLE, BY TIM CONVERSE AND JOYCE PARK, WILEY-DREAMTECH INDIA PUBLICATIONS
4. WEB TECHNOLOGIES, BLACK BOOK, DREAMTECH PRESS
5. ATKINSON, LEON. CORE PHP PROGRAMMING, NEW YORK: PRENTICE HALL
6. LEARNING PHP 5, BY DAVID SKLAR PUBLISHER O'REILLY MEDIA
7. MASTERING PHP, BY CHARLES, PUBLISHER: BPB
8. EXPERT PHP AND MYSQL, WROX PROGRAMMER TO PROGRAMMER, WROX PRESS, 2010
9. PHP FOR ABSOLUTE BEGINNERS, APRESS, 2009
10. SAMS TEACH YOURSELF CSS IN 24 HOURS (2ND EDITION), SAMS PUBLISHING, 2006

BCA-602 CLOUD COMPUTING

Max. Marks-70,
Min. Marks - 28

UNIT-I

Introduction: Historical development, Vision of Cloud Computing. Characteristics of Cloud Computing as per NIST, Cloud Computing reference model, Cloud computing environments, cloud services requirements, cloud and dynamic infrastructure, cloud Adoption and rudiments. Overview of cloud applications: EGC Analysis in the cloud Protein structure predication, Gene Expression Data Analysis, Satellite Image Processing, CRM /and ERP, Social Networking.

UNIT-II

Cloud Computing Architecture: Cloud Reference Model, Types of Clouds, Cloud Interoperability & Standards, Scalability and fault tolerance, Cloud Solutions: Cloud Ecosystem, Cloud Business Process Management, Cloud Service Management, Cloud Offerings: Cloud Analytics, Testing Under Control, Virtual Desktop Infrastructure.

UNIT-III

Cloud Management & Virtualization Technology: Resiliency, Provisioning, Asset management, Concepts of Map reduce, Cloud Governance, High Availability and Disaster Recovery. Virtualization: Fundamental Concepts of Compute, storage, networking, desktop and Application Virtualization, Virtualization benefits, server Virtualization, Block and file level storage virtualization Hypervisor Management software, Infrastructure Requirements, Virtual LAN(VLAN) and Virtual SAN(VSAN) and their Benefits.

UNIT-IV

Cloud Security: Cloud Information Security Fundamentals, Cloud Security Services, Design Principles, Secure Cloud Software Requirements, Policy Implementation, Cloud Computing. Security Challenges, Virtualization security Management, Cloud Computing Security Architecture .

UNIT-V

Market Based Management of Clouds, Federated Clouds/Inter Cloud: Characterization & Definition, Cloud Federation Stack, Third party Cloud Services. Case Study: Google App Engine, Microsoft Azure, Hadoop, Amazon, Aneka

List of Experiments:

1. Installation and configuration of Hadoop/Euceliptus etc.
2. Service deployment & usage over cloud.
3. Management of cloud resources.
4. Using existing cloud characteristics & services models.
5. Cloud Security Management
6. Performance evaluation of services over cloud. Grading System 2013-14

Recommended Text:

1. Buyya, Selvi, "Mastering cloud Computing" TMH Pub
2. KumarSaurabh, "cloud Computing", Wiley Pub
3. Krutz, Vines, "cloud Security", Wiley Pub
4. velte, "Cloud Computing-A Practical Approach", TMH Pub
5. Socinesky, "Cloud Computing", Wiley Pub