BCA I YEAR

BCA-11-FUNDAMENTALS OF COMPUTERS AND PC-SOFTWARE

Max Marks: 40 **Min Marks: 13**

Unit-I:

Introduction to Computers: History of development of Computers • Computer system concepts • Characteristics • Capabilities and limitations • Generations of Computers. • Von Neumann Architecture • Classification of Computers • Instruction Execution Cycle • Basic Components of a computer system – Control Unit, ALU, I/ O Devices, Memory – RAM, ROM, EPROM, PROM, Flash Memory and other types of memory. Types of Software – System software, Application software, Utility Software, Demoware, Shareware, Freeware, Firmware, Free Software. • Operating Systems – Functions, Types – Batch Processing, Single User, Multi User, Multiprogramming, Multi-Tasking. • Programming languages – Machine, Assembly, High Level, 4 GL. • Data representation in computers. Computer Viruses.

Disk Operating System (DOS) • Introduction, History & Versions of DOS. DOS basics • Physical structure of disk, drive name, FAT, file & directory structure and naming rules, booting process, DOS system files. Basic DOS Commands.

Unit-II:

Windows: features of windows — desktop, start menu, control panel, my computer, windows explorer, accessories. Managing multiple windows, arranging icons on the desktop, creating and managing folders, managing files and drives, logging off and shutting down windows. Entertainment – CD Player, DVD Player, Media Player, Sound Recorder, Volume Control.

WORD PROCESSING: Introduction to Word processing, Names of some commonly used word processing software.

Introduction to MS-Word: Feature, document creating, formatting, standard toolbar, drawing toolbar, tables and other features. Mail-merge, insertion of files, pictures, clipboard, graphs, print formatting, page numbering and printing documents. Spell Check, Thesaurus, Find & Replace, Inserting Header, Footer, page number & pictures. Working with Tables,

Introduction to MS - power point, Auto -wizard, creating a presentation using Auto content wizard, Blank presentation, creating, saving and printing a presentation, adding slide to a presentation, slide view, outline view, slide sorter view, notes view and slide show view. Changing text font and size, selecting text style and colour, to set header and footer. Using, bullets, clipart and word art gallery. Applying design template creating graph. Adding transitions and Animation effects, setting timings for slide show preparing note pages, preparing audience handouts.

Unit-III:

Introduction To Spreadsheet (MS-Excel): Definition And Advantages of Electronic Worksheet, Working On Spreadsheets: Cell Referencing, Range & Related Operations, Setting, Saving And Retrieving Worksheet File, Inserting, Deleting, Copying And Moving of Data Cells, Inserting And Deleting Rows & Columns, Copying, inserting, Renaming the sheet of workbook. General Short-cut commands, Entering text and numeric data, Entering date and time different functions, formatting text and numeric data. Functions and Other Features: Classification and Usage of Various Built-In-Functions In Worksheet, Passwords, Protecting A Worksheet Printing of the worksheet, page margin setting and adding header and footer, Transferring Data to and From Non Worksheet Files, Database Handling, Creating, Naming & Executing Macros. Creating graphs.

Unit-IV:

PC Maintenance and Troubleshooting: Opening the PC and identification. Study of different blocks, Assembling and disassembling. Basic Device Configuration and Installation-Printers, Microphone, Monitor, Mother Board, Sound Card, Video Card, tips on Trouble Shooting.

Introduction to Computer Hardware, Components of Mother-boards & its types, Ports, Slots, Connectors, add on cards, Power supply units, and cabinet types. Storage devices: Primary & Secondary storage medium.

Introduction to servers and network security Types of servers: Files servers, Email Servers, Proxy servers etc. Basics of Internet and Intranet: Types of Internet connections: Dialup, Broadband, Leased Line, Wi-Fi, Wi-Max, 2G, 3G, 4G, WWW, E-mails, Search Engines, Social Networking. Cloud application. Audio-video Conferencing. Voice over Internet Protocol (VOIP).

Unit-V:

Overview of System Analysis and Design, Business System Concepts, System Development Life Cycle, Preliminary Investigation, Feasibility Study, System Analysis, System Design and Testing, Implementation & Evaluation. Overview of MIS: Introduction, Role of IT, MIS - characteristics and application areas, Business and Technology trends -specialization, management by methodology, decentralization, internationalization etc.

Characteristics of a good Business Unit. Data and Information, Difference between data and information Introduction to data Processing, fields, Records and Files. Types of files: Master files and Transaction file. Introduction to ERP, SCM.

Practicals

Note: As per the syllabus and under guidance of respective faculty every student has to perform minimum 25 lab.

exercisecovering all units with equal weightage.

TEXT BOOKS:

1. Computers Fundamentals and Architecture by B. Ram
2. Microsoft Windows XP Step by Step , PHI
3. William Stallings, Operating System, Pearson Education
4. Norton, Introduction to Computers, McGraw Hill
5. Ron Mansdield, Microsoft Office, BPB Publication
6. Fundamentals of Computers: P. K. Sinha
7. System Analysis and Design by Elias M Awad.

REFRENCES BOOKS:

1. P C Software for Windows by R K Taxali
2. P C Software Bible by S.Jaiswal
3. Computers Today: Suresh K.Basandra
4. Operating System: Achyut S. Godbole
5. Management Information systems by Gerald V. Post & David L. Anderson.
6. Understanding Computer Fundamentals & Dos By G.K. Iyer
7. MS-Office Interactive course by Greg Perry, Techmedia
8. MS Office Complete Reference TMH Publication.

BCA I YEAR

BCA-12- COMPUTER SYSTEM ARCHITECTURE

MAX. MARKS: 40 **MIN. MARKS: 13**

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, K-Map. Sum of product & product of sums. **COMBINATIONAL & SEQUENTIAL CIRCUITS:** Half adder, full adder, full subtractor, Flip-Flops-RS, & T Flip-Flops, Shift registers, counters
Unit-III
CPU ORGANTSATIONS- ALU & CONTROL CIRCUIT: Idea about arithmetic circuit program control, Instruction sequencing. **INTRODUCTION TO MICROPROCESSOR:**Microprocessor Architecture (8086), 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 ORGANIATION: I/O interface, properties of Simple I/O Devices and their controller, Isolated versus memory-mapped I/O, Modes of Data Transfer, Synchronous & Asynchronous 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. MORRIS 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 I YEAR

BCA-13-PROGRAMMING AND PROBLEM SOLVING THROUGH 'C'

Max Marks: 40 **Min Marks:13**

Unit-I
Classification of programming language: Structured programming concepts, modular programming, top-down programming approach. **Problem solving using computer:** coding, compilation, debugging and testing, documentation, implementation and maintenance**.** **Problem-Solving Techniques**: Steps for Problem-Solving, Design of Algorithms, Definition, Features of Algorithm. Flowcharts, Basic Symbols used in Flowchart Design. **Basics of C:** History of C, salient Features of C, Structure of a C Program, a Simple C Program, Compiling a C Program, Link and Run the C Program.
Unit-II
Variables and Constants: Character Set, Identifiers and Keywords, Rules for Forming Identifiers, Data Types, Qualifiers, Variables, Declaring Variables, Initialising Variables, Constants, Types of Constants, operators, expressions, operator precedence and associativity. **Conditional Statements and Loops:** Decision Control Statements: ifStatement, switch Statement, Loop Control Statements: while Loop, do-while Statement, forLoop, Nested Loop, gotoStatement, Break Statement, Continue Statement. Storage Classes, Managing input/output function: formatted and unformatted
Unit-III
Functions: Definition of a Function, types of function, Declaration of a Function, Function Prototypes, passing arguments to a function, call by value, call by reference, command line argument, recursion. **Pointers:** pointers and their characteristics, address and indirection operators, pointer Type declaration and assignment, pointer arithmetic, passing pointers to functions, array of pointers, introduction to pointer to pointer.
Unit-IV
Array: one dimensional array Declaration, Initialization, insertion, deletion of an element form an array, finding the largest/smallest element in an array, two dimensional arrays, addition/multiplication of matrices. **String:** Declaration and Initialization of Strings, Array of Strings, Built-in String Functions strlen, strcpy, strcmp,strcat, strlwr, strrev Function, Other String Functions. **Structures and Unions:** Declaration of Structures, Accessing the Members of a Structure, Initializing Structures, Structures as Function Arguments, Structures and Arrays, Unions, Initializing an Union, Accessing the Members of an Union.
Unit-V
File Handling: Concept of files, Open a file using the function fopen(), Close a file using the function fclose( ), file opening mode. Input and Output using file pointers, Character Input and Output in Files, String Input / Output Functions, Formatted Input / Output Functions, Block Input / Output Functions, Sequential Vs Random Access Files, text file vs binary file. **Graphics programming**: introduction, functions, stylish liens, drawing and filling images, palettes and colours.
Practicals
Note: As per the syllabus and under guidance of respective faculty every student has to perform minimum 50 laboratory exercise covering all units with equal weightage.

Text Books:

1. E. Balagurusamy , " Programming in ANSI C"
2. How to solve it by computer by R.G.Dromy, PHI
3. Let us C by YashwantKanetkar
4. Programming in C by S.S.Bhatia
5. A first course in Programming with C, T. Jeypoovan

References Books:

1. Programming in C:Denis Ritchie
2. “C The Complete Reference”, H. Schildt, Tata McGraw Hill
3. Programming and problem solving through ‘C’(Elsevier)

BCA-I YEAR

BCA-14-INTERNET & WEB TECHNOLOGY

Max Marks: 40 **Min Marks:13**

UNIT – I

Introduction to Internet

Internet, Growth of Internet, Owners of the Internet, Anatomy of Internet, ARPANET and Internet history of the World Wide Web, basic Internet Terminology, Net etiquette. Internet Applications – Commerce on the Internet, Governance on the Internet, Impact of Internet on Society – Crime on/through the Internet.

Internet Technology and Protocol

Packet switching technology, Internet Protocol TCP/IP, Router, Internet Addressing Scheme: Machine Addressing (IP address), E-mail Addresses, Resources Addresses.

UNIT – II

Internet Connectivity

Connectivity types: level one, level two and level three connectivity, Setting up a connection: hardware requirement, selection of a modem, software requirement, modem configuration, Internet accounts by ISP: Telephone line options, Protocol options, Service options, Telephone line options – Dialup connections through the telephone system, dedicated connections through the telephone system, ISDN, Protocol options – Shell, SLIP, PPP, Service options – E-mail, WWW, News Firewall etc.

Internet Network

Network definition, Common terminologies: LAN, WAN, Node, Host, Workstation, bandwidth, Interoperability, Network administrator, network security, **Network Components**: Severs, Clients, Communication Media, **Types of network:** Peer to Peer, Clients Server, Addressing in Internet: DNS, Domain Name and their organization, understanding the Internet Protocol Address. **Network topologies**: Bust, star and ring, Ethernet, FDDI, ATM and Intranet.

UNIT – III

Electronic Mail

Email Networks and Servers, Email protocols –SMTP, POP3, IMAp4, MIME6, Structure of an Email – Email Address, Email Header, Body and Attachments, Email Clients: Netscape mail Clients, Outlook Express, Web based E-mail. Email encryption- Address Book, Signature File.

Current Trends on Internet

Languages, Internet Phone, Internet Video, collaborative computing, e-commerce.

Web Publishing and Browsing

Overview, SGML, Web hosting, HTML. CGL, Documents Interchange Standards, Components of Web Publishing, Document management, Web Page Design Consideration and Principles, Search and Meta Search Engines, WWW, Browser, HTTP, Publishing Tools.

UNIT IV

HTML Programming Basics

HTML page structure, **HTML Attribut**es , HEAD Elements , Input elements ,HTML Text, HTML links, HTML document tables, HTML Frames, HTML Images, multimedia , Introduction to CSS.

Java Script:

Introduction to JavaScript. Basic Syntax. Control Structures. Writing Functions. Working with Arrays. The Document Object Model. Events Handling, Using Browser Objects. Object Oriented in JavaScript.

UNIT – V

Introduction to AJAX :

AJAX, RIA & WEB 2.0. The XML, HTTP Request Object. Using AJAX in Web Applications.

Interactivity Tools

ASP, VB Script, JAVA Script, JAVA and Front Page, Flash

Internet Security Management Concepts, Information Privacy and Copyright Issues

Overview of Internet Security, Firewalls, Internet Security, Management Concepts and Information Privacy and Copyright Issues, basics of asymmetric cryptosystems.

Practicals:

Note: As per the syllabus and under guidance of respective faculty every student has to perform minimum 25 lab. exercise covering all units with equal weightage.

Text Books :

1.Greenlaw R and Hepp E "Fundamentals of Internet and www" 2nd EL, Tata McGrawHill,2007.

2. Ivan Bayross, “HTML, DHTML, JavaScript, Perl CGI”, 3rd Edition, BPB Publications.
3. D. Comer, “The Internet Book”, Pearson Education, 2009.

Reference Books:

1. M. L. Young,”The Complete reference to Internet”, Tata McGraw Hill, 2007.
2. Godbole AS &Kahate A, “Web Technologies”, Tata McGrawHill,2008.
3. Jackson, “Web Technologies”, Pearson Education, 2008.
4. B. Patel &Lal B. Barik, ” Internet & Web Technology “, Acme Learning Publishers
5. Leon and Leon, “Internet for Everyone”, Vikas Publishing House.

BCA-15-CYBER SECURITY

Max Marks: 40 **Min Marks:13**

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

Text Books :

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-I YEAR

BCA-16-DISCRETE MATHEMATICS AND ALGEBRA

Max Marks: 40 **Min Marks:13**

UNIT – I Set Theory:
Definition of Sets, Venn Diagrams, complements, Cartesian products, power sets, counting principle, cardinality and countability (Countable and Uncountable sets), proofs of some general identities on sets, pigeonhole principle. Relation: Definition, types of relation, composition of relations, domain and range of a relation, pictorial representation of relation, properties of relation, partial ordering relation. Function: Definition and types of function, composition of functions, recursively defined functions.
UNIT – II Algebra of logic:
Proposition logic, basic logic, logical connectives, truth tables, tautologies, contradiction , normal forms(conjunctive and disjunctive), modus ponens and modus tollens, validity, predicate logic, universal and existential quantification. Notion of proof: proof by implication, converse, inverse, contrapositive, negation, and contradiction, direct proof, proof by using truth table, proof by counter example.
UNIT – III Algebraic Structure:
Binary composition and its properties definition of algebraic structure; Groyas Semi group, Monoid Groups, Abelian Group, properties of groups, Permutation Groups, Sub Group, Cyclic Group, Rings and Fields (definition and standard results)
UNIT IV Graphs:
Graph terminology, types of graph connected graphs, components of graph, Euler graph, Hamiltonian path and circuits, Graph coloring, Chromatic number. Tree: Definition, types of tree(rooted, binary), properties of trees, binary search tree, tree traversing (preorder, inorder, postorder). Finite Automata: Basic concepts of Automation theory, Deterministic finite.
UNIT – V Determinant and Matrices:
Determinants properties, solution of simultaneous equations by Cramer's rule. Definition of special kinds of matrices, Review of matrices, inverse of matrix. Normal forms, Linear dependence, Rank, Application to theory of solutions of system of linear equations, linear transformation, Orthogonal, Unitary and Hermitian matrices, Eigen values and Eigen vectors,

Text/Reference Books:

1. Kenneth H. Rosen, "Discrete Mathematics and its Applications", Mc.Graw Hill, 2002.
2. J.P.Tremblay& R. Manohar, "Discrete Mathematical Structure with Applications to Computer Science", Mc.Graw Hill, 1975.
3. V. Krishnamurthy, "Combinatories:Theory and Applications", East-West Press.
4. Seymour Lipschutz, M.Lipson, "Discrete Mathemataics" Tata McGraw Hill, 2005.
5. Kolman, Busby Ross, "Discrete Matheamatical Structures", Prentice Hall International.
6. A text book of Discrete Mathematics by H K Pathak and D C Agrawal ,ShikshasahityaPrakashan, Meerut.