

**BSC-IT-1ST YEAR**  
**PAPER -1**  
**SECTION -A**  
**(FUNDAMENTALS OF INFORMATION TECHNOLOGY)**

**UNIT -1**  
**(HARDWARE)**

- Brief History of development of Computers.
- Computer System Concepts : Features & Limitations.
- Basic components of Computer Hardware, CPU. Memory Unit & I/O Unit.
- CPU Organization - CU, ALU, Registers.
- Memory organisation - RAM, ROM, EPROM, PROM, Cache Memory.
- I/O Organisation - VDU, Keyboard, Mouse and secondary I/O Devices.
- Mass Storage Organisation - Magnetic Tape, Magnetic Disk, CD, DVD, Flash Storage Devices
- Data Representation - Number systems - Binary, Decimal, Octal. 2's Complement. ASCII & EBCDIC Codes.

**UNIT - II**  
**(INTRODUCTION TO SOFTWARE)**

- Types of Software
- System Software
  - Operating Systems Command interpreters
  - Translator-Assemblers, Compilers, Interpreters.
- Types of Operating Systems
  - Batch Processing Single Process Monitors Multiprogramming – Real time Online
  - Multiprocessing
- Programming Languages
  - Machine Language Assembly Language High Level Languages
- Application packages
  - Word Processors Spread Sheet Presentations Other Utilities
- Computer viruses
  - Working & spread of viruses, Types, Control viruses
- Communication & Transmission
- Analog & Digital Signals
- Modulation - Demodulation (MODEM)
- Transmission Mode
  - Simplex, Half Duplex, Duplex
- Definition of computer networks
- Types - LAN, WAN & MAN
- Topologies

**PAPER -1**  
**SECTION - B**  
**(STRUCTURED PROGRAMMING USING 'C' LANGUAGE)**

**UNIT -1**  
**(PROGRAMMING CONCEPTS)**

- Programs & Program Development
- Flow Charts
- Pseudo Codes
- Programming Technique.   - Structured Programming  
  - Top-down approach  
  - Bottom-up approach  
  - Object Oriented Programming

**UNIT - II**  
**('C' PROGRAMMING LANGUAGE)**

- Overview       - History & Features
- Structure of a 'C' Programme
- Variables, Expressions, Identifiers, Keywords, Data types & Constants Operators
  - Arithmetic v Logical, relational, Conditional & Bitwise.
- Operators Precedence & Associativity   - I/O - Character Based & Formatted
- 'C' Control Statements                   - Decision Control – IF,IF-ELSE,Nested
  - Loops / Iteration - while, do-while, for -loops Break /
  - continue / go to statements
- Arrays                                       - Single & Multi Dimensional
- Strings
- Functions                                   - Call by value & call by Reference
- Introduction to Pointers
- Recursion
- Structure & Unions
- C-Files

**SECTION - C**  
**(INTRODUCTION TO IBM ARCHITECTURES)**

- |   |                                |
|---|--------------------------------|
| • Microprocessors & Microprocessor Families | 8086 Architecture              |
| • Personal computers - IBM & Apple Series   | DMA Controller & Configuration |
| • IBM PC Characteristics- PC/ PCAT / PCXT   | VGA Controller                 |
| • Arithmetic Co-processor                   | Clocks                         |

# BSC-IT-IIND YEAR

## PAPER - 1ST

### SECTION -A

#### (DATA STRUCTURE)

- Dynamic Memory Allocation - Malloc (), Alloc (),
- Analysis of Algorithms.
- Arrays - Searching, Sorting, Insertion, Deletion, Merging.
- String, Manipulation.
- Linked Lists - Single & Double, Operations.
- Sparse Matrices,Operations.
- Stacks - Operations, Infix, Prefix & Postfix Notations.
- Queues - Operations, Circular & Dequeue.
- Trees - BS Tree, AVL- Tree, B-Tree, Heap Searching & Sorting Techniques
- Graphs-Adjacency, DFS, BFS, Minimum Spanning Tree, Dgikistra & Kruskals Algorithms

### SECTION -B

#### (DISCRETE MATHEMATICS)

##### Unit-I Boolean Algebra

- Introduction to Boolean Algebra
- Basic Postulates
- Canonical Forms - Sum of Products & Product of Sums
- Karnaugh Maps
- Simplification Using Karnaugh Maps.

##### Unit-II Circuit Design

- Introduction to Digital Logic
- Gates - Invertors. AND, OR, XOR, UNIVERSAL NAND GATE, UNIVERSAL NOR GATE, TRUTH TABLES AND LOGIC DIAGRAMS.
- Basic Circuits - Adders, Decoders, Encoder, Multiplexers, Flip-Flops etc.

**SECTION –C**  
**(UNIT-1/LINUX)**

- Basic Features, Advantages, Basic, Architecture of Unix / Linux System, Kernel, Shell.
- Linux File System-Boot Block, Super Block, Inode Table, Data Blocks, How Linux access files storage files, Linux standard, directories, Commands for files and directories cd, ls, Cp, md, rm, mkdir, rmdir, more, less, creating and viewing files, using cat, checking disk free spaces, Linux system startup and shut-down process.

**UNIT-II /LINUX**

- Understanding shells, Processes in Linux, connecting processes with pipes, Redirecting input/output, Background processing, managing multiple processes, changing process priority, scheduling of processing at command, batch commands, kill, ps, who, sleep, Printing commands, find, sort Cal, Banner, touch, file, file related commands-ws, sat, cut, grep, dd, etc, Mathematical Commands bc, expr, factor, units

**IIInd YEAR**

**PAPER - II**

**SECTION-A**

**(OBJECT ORIENTED PROGRAMMING USING C++)**

**Unit-1**

**(OOPS Basics)**

- Object
- Classes
- Polymorphism
- Reusability
- Inheritance
- Message Passing

**Unit -II**

**(C++ Programming Language)**

- History & Features, Introduction of Classes, Comparison / Additional Features to C-Language
- Object oriented features in C++
- Scope Resolution Operator
- Static Data Member
- Static Function
- Passing object of function
- Returning Objects.

- Constructors & Destructors
- Function Overloading in C++, Operator Overloading in C++
- Inline Function Friend Function
- Inheritance - Single, Multiple, Multilevel Virtual Functions
- Void Pointers
- Pure Virtual Functions
- Function Templates & Class Templates.

## II<sup>nd</sup> YEAR PAPER - II

### SECTION -B (COMPUTER NETWORKING & INTERNET)

#### UNIT -1

- Need & Advantages of Networks, Types: Server based, Peer based, Hybrid
- Topology, Network media types, H/w protocol. Software protocol, , Digital signaling, analog,
- Bit synchronization, band and broad band transmission

#### Unit-II

- OSI and IEEE 802 Model, IEEE 802.3, IEEE 802.4 IEEE 802 5 & Fast Ethernet ATM, LAN Access Techniques, Bit map protocols.

#### Unit-III

- Connectivity, Hubs, Repeaters, , Bridges, Multiplexers, Routers, Gateways Modems, Types

#### Unit-IV

- Internet V/s Intranet, growth of Internet, ISP, , Connectivity, Dial up, Leased Line, URL,
- Domain name, Portals Application. POP & Web based e-mail Merits, IP Addressing
- Basics of sending & receiving e-Mails.

#### Unit-V

- Internet Chatting, WWW, HTTP, URL, HTML
- Overview of E-commerce, Internet, e-business, Advantage of E-commerce

# PAPER - II

## Section - C

### (DIGITAL COMPUTER ORGANISATION)

#### Unit-I

- **CUP ORGANIZATION:** ALU & Control Circuit Idea about Arithmetic, Circuits, Program Control Instruction Sequencing.

#### Unit – II

- **INPUT-OUTPUT ORGANIZATIONS:** 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-III

- **MEMORY ORGANIZATION:** Memory Hierarchy, Auxiliary memory, Magnetic drum, Disk & Tape Semi-conductor, memories, Associative, memory, virtual Memory .Address Space & Memory space, Address mapping, Page table, Page Replacement, Cache memory, Hit Ratio, Various mapping techniques, writing into Cache.

# BSC-IT-IIIrd YEAR

## PAPER-1

### SECTION-A

### (JAVA PROGRAMMING)

#### Unit-1:

- C++ Vs Java, Java and Internet and WWW, Java support systems, Java environment, Java Program Structure, Tokens, Statements, Java Virtual machine, Expressions & its Evaluation, Data Types, Type Casting, Operators : Expressions & its Evaluation, Decision making and branching, Loops, Jumps in Loops, Labeled Loops.

#### Unit - II ;

- Defining a class, Adding variables and method, Creating objects, Assessing class members, Constructors, Method overloading, Static members, Nesting of methods, Inheritance: Extending a class, Overriding methods, Final variables and methods, Final classes, Finalize methods, Abstract methods and classes, Visibility control.

#### Unit-III :

- Arrays, One dimensional & two dimensional Strings, Vectors, Wrapper classes, Defining interfaces, Extending interfaces, Implementing interfaces, Accessing interface Variables, System packages, Using System packages, Naming Conventions, -Creating packages, Accessing a packages, Using package, Adding a class to a package, Hiding classes.

#### Unit - IV:

- Threads, Creating threads, Extending the threads class, Stopping and blocking a thread, Life cycle of a thread, Using thread methods, Thread exceptions, Thread priority, Synchronization, Implementing the runnable interface.

#### Unit - V:

- Applets, Local and remote applets, Applets Vs applications, Writing applets, Applets life Cycle, Creating an executable applet, Designing a web page, Appletage, Adding applet to HTML file, Running the applet, Passing parameters to applets, Aligning the display, HTML tags & applets, Getting input from the user.



# **PAPER- I**

## **Section – B**

### **(Internet and Web Designing)**

#### **Unit-1:**

- Introduction to Internet Applications:- introduction to internet, WWW, News group. E-mail, Messaging Protocols, Internet Protocols (HTTP, FTP, TFTP, DNS, SMTP, IMAP, POP and TCP/IP), Setting up Internet connection using Dial-up and leased-line (Broadband). Creating E-mail..Sending mails Attachments, using FTP Services.

#### **Unit- II:**

- Web Page Designing :- using different browsers. (Internet Explorer/Netscape Navigator) Browsing internet and E-mail service providers, Features of internet Services (Chatting, Conferencing), MIRC HTML& QHTML: HTML Tags, Designing Tables, Frames, and Forms, Placing images, animation and Sound on Sites, Using Hit Counter. Adding VB Script code to html pages, Scripting Functions Using Front Page2002 Hosting your website using The Free hosting Sites like yahoo, Angelfire, etc.

#### **Unit-III :**

- Server side programming using ASP. :-Asp objects, DOM, Database accessing on Web, Using Forms for perform Query in Databases.

## **SECTION – C**

### **(INTRODUCTION TO NETWORK SECURITY)**

#### **Unit -1**

- Introduction ; -Networking Terminologies, Active Vs Passive Attacks, Viruses, Worms, Trojan Horse.The Multi Level Model of Security, Legal Issues. Introduction, Breaking an Encryption Scheme, Types of Cryptographic Functions-Secret Key, Public Key, and Hash Algorithms. Data Encryption Standards, International Data. Encryption algorithm, Advanced Encryption Standard, RC4 Modes of Operation, Encrypting a large message, Generating MACs, Multiple Encryption DES. Public Key Algorithm, Modular Arithmetic, RSA, Diffie-Hellman, Digital Signature Standard..

#### **Unit - II:**

- Authentication :- Password based, Address based, Cryptographic authentication protocols Eavesdropping and Server Database reading, Trusted Intermediaries, Session Key, Authentication of People Security Handshake pitfalls. Electronic Mail Security, PGP (Pretty Good Privacy). Firewalls, Web Issues.

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## PAPER- II

### SECTION - A

#### (VISUAL PROGRAMMING WITH VISUAL BASIC)

##### Unit -1:

- **Visual Programming :-** The Fundamental of visual Basic, Introduction, VB Editions, Working with visual Basic, IDE, The elements of the user-interface, Designing the user Interface, Programming an application, Visual Development and Event-Driven Programming, Customizing the environment.
- **Visual Basic the Language :-** Visual basic projects, the project files, variables, constants, Arrays, collections, procedures, arguments, function returns values control flow statements, looping statements, nested control structures, exit statement.
- **Working with forms :-** The appearance of the form, designing menus, building dynamic forms, drag and drop operations, mouse conflicts.
- **Basic Active X Controls** The textbox control, the list box and combo box controls, the scroll bar and slider controls, the file controls.
- **Advanced Active X controls ;-** The Common dialogs control, using the common dialog control the tree view and List view controls, the rich text box control, the RTF language, the msflexgrid control.
- **Multiple Document Interface :-** MDI applications, parent and child MDI forms, Accessing child forms, Implementing scrolling forms.
- **Database Programming with VB :-** The Active date objects, data environment, sql, mshflexgrid control, ado, Dao, Library, Report designing using data report. Interfacing with MS-Access & Oracle database.

### SECTION - B

#### (SQL SERVER)

##### Unit-1:

- **Introduction :-** SQL Server 2000 Relational Database Management System and Conventional database systems. Installing SQL Server. Working with Enterprise Manager. Configuring a Database, Creating Tables, Views, Defining constraints, Creating relationships. Designing Database diagram. Creating Indexes. Creating user-defined data types, Creating Stored Procedures and Function.
- Working with Query Analyzer, Writing queries, Using relational operators like project, join, Intersect union, difference. Built-in SQL functions. Performing data manipulation from query analyzer. Query optimization.
- Using OLE DB, ADO for interfacing with front-end applications designs in VB, Java etc.

**SECTION –C**  
**(SYSTEM ANALYSIS & DESIGN)**

**Unit-I**

- **SYSTEM CONCEPTS:** - The system concept, Characteristics of system, Elements of system, Types of system, man made information systems.
- **SYSTEM DEVELOPMENT LIFE CYCLE:** - Recognition of need, Feasibility study, Analysis, Design implementation, post implementation and maintenance System planning and control.
- **SYSTEM PLANNING AND INITIAL INVESTIGATION:** - Bases for Planning system analysis, Determining users requirements and analysis, Fact finding, Determination of feasibility .
- **TOOLS OF STRUCTURED ANALYSIS :-** Logical and Physical Models, Data flow diagram, Data dictionary, System structured charts, System model, Pseudo codes, Decision tree, Decision tables, HIPO chart, Gantt charts, Warries diagram.
- **FEASIBILITY STUDY :-** System performance constraints, identification of system objective feasibility analysis and report.
- **SYSTEM DESIGN :-** Stages of system design, Logical and Physical design methods, From driven mythologies; IPO and HIPO charts, structured walk through, Audit considerations: Processing controls, Data validation, Audit trail and documentation control.