

# ***B.Sc.(HONS)INFORMATION TECHNOLOGY***

**Three Years Degree(Hons.)Course**

## **First Year Paper-I**

### **SECTION-A FUNDAMENTALS OF INFORMATION TECHNOLOGY**

UNIT-I(HARDWARE):Brief history of development of Computers,Computer System Concept,Features & Limitations. Basic Components of Computer Hardware,CPU,Memory Unit&I/O Organisation. CPU Organisation-CU,ALU,Register. 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 Device. Data Representation-Number System-Binary,Decimal,Octal,2's Complement,ASCII-EBCDIC Codes.

UNIT-II(INTRODUCTION TO SOFTWARE):Types of Software,System Software:Operating System,Command Interpreters,translators,Assemblers,compilers,Interpreters. Types of Operating System:Batch Processing,Single Process Monitors,Multiprogramming,Real time,Online,Multiprocessing Programming Languages:Machine Language,Assembly Language,High Level Language. Application Packages:Word Processors,Spread Sheets,Presentations,Other Utilities Computer Viruses,Working & spread of Viruses,Types,Control of Viruses. Communication & Transmission,Analog & Digital Signals,Modulation-Demodulation(MODEM). Transmission Mode:Simplex,Half Duplex,Duplex. Line Configuration:Point to Point,Multipoint. Definition Of Computer Networks,Types:LAN,WAN&MAN. Topologies,Communication Protocols.

### **SECTION-B STRUCTURED PROGRAMMING USING 'C' LANGUAGE**

UNIT-I(PROGRAMMING CONCEPTS):Programs & program Development,Flow Chart,DBMS vs Files. Programming Technique:Structured Programming,Top-Down approach,Bottom-up approach,Object Oriented Programming.

UNIT-II('C'PROGRAMMING LANGUAGE):Overview-History & Feature,Structure of a 'C'-Programme.

Variables,Expression,Identifiers,Keywords,Data types & Constants. Operators-Arithmetical,Logical,Relational,Conditional & Bitwise. Operators

Precedence & Associativity. 'C'-I/O-Charater Based & Formatted. 'c' control Statements:Decision Control-if,if-else,nested if-else;Loop/Iteration-while,do-while,for-loops;Break/continue/goto statement. Array:Single & Multi Dimensional. Strings. Function:Call by Value & Call by Reference. Introduction to Pointers. Recursion. Structure & Unions. C-Files.

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

MicroProcessors & MicroProcessors Families.  
Personal computers-IBM & Apple Series.  
IBM PC Characteristics-PC/PCATI PCXT.  
8086 Architecture.  
DMA Controllers Configuration.  
VGA Controller.  
Arithmetic Co-processor.  
Clocks.

## **First Year Paper-II**

### **SECTION-A(DATA BASE MANAGEMENT SYSTEM)**

UNIT-I(DBMS BASICS):DBMS vs File,Organisation of DBMS,Three Views & Schemes of DBMS. DDL,DML,Queries,SQL. Types of DBMS-Relational,Hierarchial & Network. E-R Diagrams. Generalisation,Specialisation,Aggregation.  
UNIT-II(RDBMS):Relation-Definition,Functional Dependency. Domain,Attributes,Tuples,Fields. Keys:Candidate Key,Primary Key,Foreign Key. Codd's Rules. Normalisation upto BCNF. Example RDBMS-ORACLE(Practical Classes).

### **SECTION-B(OPERTATING SYSTEM CONCETPTS)**

UNIT-I(OS BASICS):Definition of OS, Function of OS, Types of OS.  
UNIT-II(PROCESS MANAGEMENT):Process Definition. PCB, Process States, Scheduling – algorithms & Types-FCFS, SJF Round Robin;LTS, STS, MTS. Preemptive & Non-Preemptive Scheduling. Deadlocks – Avoidance, Detection & Recovery. Inter-process Synchronization – Semaphores & Mutual exclusion.  
UNIT-III(MEMORY MANAGEMENT):Fixed & Dynamic Partitions. Compaction,Paging,Segmentations Virtual memory, page Replacement Algorithms.  
UNIT-IV(DEVICE MANAGEMENT):Overview – Types of I/O – Serial & Block I/O, Programmed I/O ,Interupt Driven I/O,DMA Polling, Daisy- Channing,

Multiple Interrupt lines. Device Drivers & Device Controllers, BIOS, IS, Devices Independent Software.

UNIT-V(FILE MANAGEMENT):Blocks, Sectors, Clusters, Directories. Files- Concepts & Definitions, Types of files & Organisation. Disk free Space Management, Disk free Space Allocation, Disk Scheduling.

UNIT-VI(DISK OPERATING SYSTEM (DOS)):History & versions. Booting – FAT, Directory Structure. DOS Systems Files. DOS commands – Internal & Externals, DOS Batch Files

### **SECTION-C(BASIC ELECTRONICS)**

UNIT-I:Types of resistance, Resistance symbol, color code capacitors, capacitors, symbol, Code types, Mica & paper capacitor, Inductance, Conductor, Insulator, Band Theory, Intrinsic & extrinsic semiconductors, Theory of p-n Junction, Capacitance & Diffusion Capacitance.

UNIT-II:Zener diode, Tunnel diode, Varactor diode, Power diode, photo diode, LED, LCD, Point Contact diode, Schottky diode, Half wave & full wave rectifier with & without filter.

UNIT-III:BJT Characteristics, CE, CB, CC configurations, FET metal oxide, Semiconductor (MOSFET) CMOS, Unijunction transistor & Photo transistor.

UNIT-IV:Single stage RC coupled amplifier frequency response class A, Class B, Class AB, Class C, Push pull amplifier, Efficiency distortion in amplifier their merits & demerits, BJT & FET RC coupled amplifiers.

UNIT-V:Switching Characteristic BJT & FET, Monostable & Astable Multivibrators, RC integrators & differentiators, Clipper & Clamber circuit.

## **Second Year Paper-I**

### **SECTION-A(DATE STRUCTURE)**

Dynamic Memory Allocation-Malloc(),Alloc(),Analysis of Algorithms. Array- Searching,Sorting,Insertion,Deletion,Merging. String-Manipulation. Linked Lists-Single & Double Operations. Sparse Matrices-Operations. Stack - operation, infix, prefix & postfix Notation . Queues-Operations, Circular & Deque. Trees-BS Tree, AVL Tree ,B Tree, Heap Searching & Sorting Techniques. Graphs-Adjacency, DFS, BFS, Minimum Spanning Tree, Djekistra's & Kruskal's Algorithms.

### **SECTION-B(DISCREETE 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, Encoders, Multiplexers, Flip-Flops etc.

### **SECTION-C(LINUX)**

UNIT-I LINUX: Basic features, Advantages, Basic Architecture of Unix/Linux System, Kernel, Shell. Linux File System-Boot-Block, Super Block, I-node Table, Data Blocks, Linux access File, Storage File, Linux Standard directories, Commands for files and directories:-

cd, ls, cp, md, nn, 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 Command, Kill, ps, who, sleep, Printing Command, Find, sort, cal, Banner, touch file, file related commands- ws, sat, cut, grep, dd etc, Mathematical Commands- be, expr, factor, unite.

## **Second Year Paper-II**

### **SECTION-A(OBJECT ORIENTED PROGRAMMING USING C++)**

UNIT-I BASIC: Object, Classes, Polymorphism, Reusability, Inheritance, Message-passing, Genericity.

UNIT-II C++ Programming Language: History & Feature, 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 Object. Constructors & Destructors. Function Overloading In C++, Operator Overloading In C++. Inline Function, Friend Function. Inheritance-Single, Multiple, Multilevel. Virtual Functions. Void Pointers. Pure Virtual Function. Function Templates & Class Templates.

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

UNIT-I Need & Advantages of Networks, Types: Server based, Peer based, Hybrid. Topology, Network Media Types, H/W Protocols, Software Protocols, Digital Signaling, Analog Signaling, Bit Synchronization, Base Band

And Broad Band Transmission.

UNIT-II:OSI And IEEE 802 Model,IEEE 802.3,IEEE 802.4,IEEE 802.5 & fast Ethernet FDDI,ATM,LAN access techniques,Bit map protocol.

UNIT-III:

:Connectivity,Hubs,Repeaters,Bridges,Multiplexers,Router,Gateways,Modems ,Types of Modem, Modulation Schemes.

UNIT-IV: :Internet us Intranet,Growth of Internet,IPS,Connectivity,Dial Up,Leased Line,URL,Domain Name,Portals ,Application,POP & Web based E-Mail,Merits,IP Addressing.

Basic of Sending & Receiving E-Mail.

UNIT-V: :Internet Chatting,WWW,HTTP,URL,HTML. Over View of E-Commerce,Internet.E-Business,Advantage of E-Commerce.

### **SECTION-C(DIGITAL COMPUTER ORGANISATION)**

UNIT-I:CPU ORGANIZATION:ALU &Control Circuit,Idea About Arithmetic-Cicuits,Program Control, Instruction Sequencing.

UNIT-II:INPUT-OUTPUT ORGANIZATION:I/O Interface,Properties of Simple I/O Devices and their Controller, Isolated Us Memory-mapped I/O,Model 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,Semiconductor Memories,Associative Memory,Virtual Memory,Address Space & Memory Space, Addressmapping,Page Table,Page Replacement,Cache Memory,Hit Ratio,Various Mapping techniques,Writing Into Cache.

## **Third Year Paper-I**

### **SECTION-A(JAVA PROGRAMMING)**

UNIT-I :BASIC:C++ us Java,java,Internet And WWW,Java support system,Java Environment,Java program Structure,Tokens,Statement,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: Define 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,Finalizer methods,Abstract methods and classes,Visibility control.

UNIT-III :Arrays,One Dimensional & two Dimensional

Array, Strings, Vectors, Wrapper Classes, Defining Interfaces, Extending Interfaces, Implementing Interfaces, Accessing Interface Variables, System packages, Using System packages, Naming Conventions, Creating Packages, Accessing a package, Using package, Adding a class to a package, Hiding classes.

UNIT-IV: Threads, Creating threads, 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 us applications, Writings, Applets life Cycle, Creating an Executable Applet, Designing a web page, Applet tag, Adding applet to HTML file, Running the applet. Passing parameters to applets, Aligning to Display, HTML tags & applets, Getting input from tag user.

## **SECTION-B (INTERNET AND WEB DESIGNING)**

UNIT-I: 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 Account, 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 & DHTML: HTML Tags, Designing Tables, Frames and Forms, Placing Images, Animation and Sound on Site. using Hit Counter, Adding VB Script Code to html pages, Scripting Function, Using FontPage2002 Hosting your website using the Free hosting Site like yahoo, Angelfire etc.

UNIT-III: Server side Programming using ASP, ASP Object, DOM, Database accessing on Web using Forms for perform Query in Database.

## **SECTION-C (INTRODUCTION TO NETWORK SECURITY)**

UNIT-I: Introduction: Networking, Active vs Passive Attacks, Viruses, Worms, Trojan Lorse. 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 Model Of Operation, Encrypting a large message, Generating MACs, Multiple Encryption DES, Public Key Algorithm, Modular Arithmetic, RSA, Diffie-Heilman, Digital Signature Standard.

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

## **Third Year Paper-II**

### **SECTION-A(VISUAL PROGRAMMING WITH VISUAL BASIC)**

Visual Programming:The Fundamental Of Visualn Basic,Introduction,VB Edition,Working with Visual Basic,IDE,The Element 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,the4 project files,variables,constants,Array,collections, procedures,Agruments,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 form,drag and drop operations,mouse conflicts. Basic ActiveX Controls:The textbox control,the list box and combo box controls,the scroll bar and slider controls,the file controls. Advanced ActiveX Controls:The Common dialogs control,using the common dialog control,the treeview and Listview controls,the rich text box control,the RTF language,the msflexgrid control. Multiple Document interface:MOI applications,parent and child MDI Forms,Accesing child forms,Implementing scrolling forms. Database Programming with VB:The Active data objects,data environment,SQL,msflexgrid control,ado, Dao,Library,Report designing using data report,Interfacing with MS-Access & Oracle database.

### **SECTION-B(SQL SERVER)**

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 function.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)**

**System Concepts:**The system concept,Characteristics of system,Elements of system,Types system, Man made informmation system.

**System Development life cycle:**Recognition of need,Feasibility study,Analysis,Design,Implementation, Post implementation and maintenance,System planning and control.

**System planning and inital 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, Wamier diagram.

**Feasibility Study:**System performance constraints,identification of system objective,feasibilit analysis and report.

**System Design:** Stages of system design,Logical and Physical design methods,Form driven methodologies, IPO and HIPO charts,Structured walk through,Audit considerations:Processing controls,Data validation, Audit-trail and documentation control.