

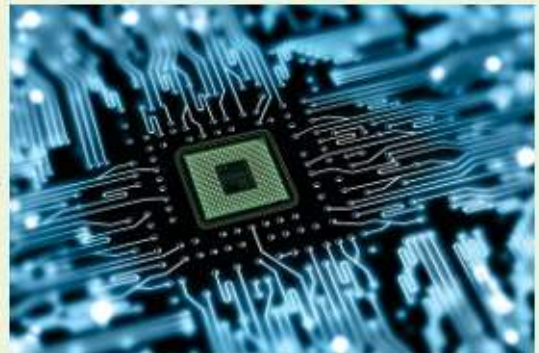
## **PAPER-1**

### **SECTION-A (FUNDAMENTALS OF INFORMATION TECHNOLOGY)** **UNIT - I (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 Softwares
  - Operating Systems
  - Command interpreters
  - Trahslator-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 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



### REFERENCES

- COMPUTERS TODAY - by S. K. Basandra, Galgotia Publication
- FUNDAMENTAL OF INFORMATION TECHNOLOGY - by Alexis Leon & Mathews Leon, Vikas Publishing House, New Delhi.
- COMPUTER FUNDAMENTALS - by P. K. Sinha - BPB Publications



## SECTION - B (STRUCTURED PROGRAMMING USING 'C' LANGUAGE)

### UNIT -1 (PROGRAMMING CONCEPTS)

- Programs & Program Development
- Flowcharts
- Pseudo codes
- Programming Technique.
  - Structured Programming
  - Top-down approach
  - Bottom-up approach
  - Object oriented programming

### UNIT -11 ('C' PROGRAMMING LANGUAGE)

- Overview-History & Features
- Structure of a 'C' Programme
- Variables, Expressions, Identifiers, Keywords, Data types & Constants operators-  
Arithmetical, Logical, relational, Conditional & Bitwise.
- Operators Precedence & Associativity
- 'C' -I/O -Character Based & Formatted
- 'C' Control Statements
  - Decision Control - If, If - else, nested If - else
  - 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

### REFERENCES

- PROGRAMMING IN 'C' - by E. Balaguruswamy, TMH Publications
- PROGRAMMING WITH 'C' - by Gottfried, Schaums series, TMH Publications
- 01 LEVEL PROGRAMMING CONCEPTS & SYSTEMS - by V.K. Jain, BPB Publications
- 'C' COMPLETE REFERENCE - by Herbert C, TMH Publications



## SECTION - C (INTRODUCTION TO IBM ARCHITECTURES)

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





## REFERENCES

- IBM;-C - by Peter Norton
- COMPUTER ORGANISATION & ARCHITECTURE - by William Stallings, TMH Publications

## PAPER - II

### Section - A (DATA BASE MANAGEMENT SYSTEMS)

#### UNIT-I(DBMS BASICS)

- DBMS vs Files
- Organisation of DBMS
- Three Views & Schemes of DBMS
- DOL, DML, Queries, SQL
- Types of DBMS-Relational, Hierarchical & 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)



## REFERENCES

- DATA BASE SYSTEM CONCEPT - by Korth & Silberschatz
- AN INTRODUCTION TO DATABASE SYSTEM - by Bipin Desai
- DATA BASE MANAGEMENT SYSTEM - by Leon & Leon, Vikas Publications
- AN INTRODUCTION TO DATA BASE SYSTEM - by C.J. Date

### Section-B (OPERATING SYSTEM CONCEPTS)

#### UNIT-I (OS BASICS)

- Definition of OS
- Functions 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
- Interprocess Synchronisation - Semaphores & Mutual exclusion





### UNIT -III (MEMORY MANAGEMENT)

- Fixed & Dynamic Partitions
- Compaction
- Paging
- Segmentation
- Virtual memory, Page Replacement Algorithms

### UNIT-IV (DEVICE MANAGEMENT)

- Overview - Types of I/O - Serial & Block I/O
- Programmed I/O
- Interrupt Driven I/O
- DMA
- Polling, Daisy-Chaining, Multiple Interrupt lines
- Device Drivers & Device Controllers, BIOS, IS < Device 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 System Files
- DOS Commands - Internal & External
- DOS - Batch Files



### REFERENCES :

- OPERATING SYSTEM CONCEPT - by Galwin & Stlberschatz
- OPERATING SYSTEMS - by Tenanbaum
- OPERATING SYSTEMS - by Dietel

## SECTION -C (BASIC ELECTRONICS - I)

### UNIT - I

- Types of resistance, Resistance symbol, Color code, capacitors, Capacitor's 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, Halfwave & fullwave rectifier with & without filter.

### UNIT - III

- BJT characteristics, CE, CB, CC configurations, FET metal oxide, Semiconductors (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 & Clamper circuit.

#### REFERENCE

- BASIC ELECTRONICS - by B.L.Thareja
- BASIC ELECTRONICS - by A.K. Sahani
- BASIC ELECTRONICS - by V.K. Mehta

