

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
 - 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 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 7 SYSTEMS - by V.K. Jain, BPB Publications
- 'C' COMPLETE REFERENCE - by Herbert C, TMH Publications



SECTION - C (INTRODUCTION TO IBM ARCHITECTURES)

- Microprocessors & Microprocess or Families
- Personal computers - IBM & Appleseries
- 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
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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.



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22

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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



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