
CONTENTS

Unit–I	Computer Architecture and Circuit Design.....	3–65
	(Numbering Systems, Data Organization, Logical Operations on Bits. Signed and unsigned Numbers, shifts and Rotates, Bit field and packed data, the ASCII character set, Boolean Algebra, Simplification of Boolean functions, correspondence between electronic circuits and Boolean functions, Combinatorial Circuits, sequential and clocked logic. The basic system components, the memory subsystem, the I/O subsystem, CPU Registers, the control unit and instruction sets, the X86 instruction set. The 80 × 86 CUPs : A Programmer's view, Descriptive Questions.)	
Unit–II	Introduction to Database Concepts.....	66–133
	(Introduction, Traditional file oriented approach, The database approach, Some basic concepts, DBMS components and Architecture, Database Management, System facilities, elements of a Database Management System, Data dictionary, Database Models and their implementation, Entity-Relationship (E-R) Model, Generalization and Specification, aggregation, Advantages and disadvantages of Relational Approach, Difference between relational and other models, Concepts of a Relational model, the CODD Commandments, the relational algebra, Normalization, SQL, transactions, schedules and recovery. Distributed Databases, Object oriented model, Difference between relational database management system and object oriented database management system, Descriptive Questions.)	
Unit–III	Computer Graphics.....	134–159
	(Display System : Video device information, Flat panel Display, Display technology, Graphics, 2D geometrical transformations, Viewing of 3D, Geometric modelling, Data Storage devices, File formats and compression animation, Graphic standards, Descriptive Questions.)	
Unit–IV	Programming Language Concepts.....	160–211
	(Introduction, What is an algorithm, Flow charting, Problem and its algorithm concept of a programming language, Categories of languages, Elements of a programming language subroutine and functions, Procedural languages vs OOPS, What is variable ?, Fundamental variable type, What is functions ?, Declaring and Defining Functions, Classes and Members, Constructor and destructor, What is pointer ?, Inheritance, Object-oriented methodology, Compiler Fundamentals, Compiler Designing Phases, Context free grammars, Code Generation and Optimisation, Software tools, LEX and YACC, Program Development Tools, Descriptive Questions.)	
Unit–V	Data Communication and Networking.....	212–266
	(Concept of data communication, Communication Protocol, Data Communication Terminology, Modes of transmission, Types of data transmission, Methods of data	

transmission, Transmission mediums, Communication Channel configuration, Multiplexers, Concentrator, Switching techniques, Computer Network, Components of Network, Classification of Networks, Network protects, Network connecting devices, Networking software/Architecture, Services and Protocols, The OSI reference model, Layers of OSI reference model, TCP/IP reference model, layers of TCP/IP, features of TCP/IP, Comparison between OSI Model and TCP/IP Model, Network Operating System, UNIX, Network Security, Hacker, Cracker, Spoofing, Firewall, Encryption, Cryptography, Digital Certificate, Digital Signature, Descriptive Questions.)

Unit–VI Data Structures and Algorithms..... 267–335

(Introduction, Abstract data type, Algorithm, Analysis of algorithm Space Complexity, Time Complexity, asymptotic notations (Big Oh, Omega, Theta), Goals of data structures, linked lists, Static and dynamic Memory allocation, Singly linked list, Basic list operations, Circular linked list, Doubly linked list Stacks and Queues, Queue implementations, Circular queue, Priority queue, Sorting (Internal/External), Insertion sort, Selection sort, Bubble sort, Shell sort, Merge sort, Quick sort, Searching techniques, Sequential search, Binary search, Trees, Binary trees, Heap Applications, Graphs, Descriptive Questions.)

Unit–VII Object-oriented Analysis and Design..... 336–390

(The Object-oriented Paradigm, Object-oriented Languages, Inheritance, Classifications of inheritance, Object-oriented Methodology, Graphical notation, introduction to HTML, What is DHTML ?, XML, Extensible Style Sheet languages, Introduction to Java Script, Introduction to VB Script, Java, Servlet, Applets, Descriptive Questions.)

Unit–VIII System Analysis and Designing..... 391–460

(System concepts, Classification of Systems, Information Systems, Introduction to system analysis and designing, Role of System analyst, System life cycle models, Different life cycle models, Comparing different models, Feasibility Study, COCOMO, Interviews, Questionnaires, decision making and documentation, decision trees, decision tables, data-dictionary, design of data bases and files, data flow diagrams, control flow model, Cohesion, Coupling, Data dictionary, Data requirements and data modeling, Fundamentals of Software testing, Verification and validation, Testing strategies, Software quality factors, Software quality assurance, Application of Technical methods, FTR (Formal Technical Review, Descriptive Questions.)

Unit–IX Operating System Concepts..... 461–524

(Introduction, Serial Processing, Batch Processing, Multiprogramming, Operating System Structure Process Management, Processor Scheduling Basic Concepts of Inter-Process Communication and Synchronization, deadlocks, Memory Management, Paging, Segmentation, Virtual Memory, File Concepts, Directories, Disk Organisation, Disk Scheduling, File Protection, Unix Operating System, Descriptive Questions)

Unit–X Artificial Intelligence..... 525–583

(What is Artificial Intelligence, A.I. Techniques, A.I. Programming, Backtracking, Knowledge representation and Inference, Semantic nets, Frames, Predicate Logic, Forwards and backwards Reasoning Expert System, MYUN, Using search in problem solving, Natural Language Processing, Vision, Probabilistic Reasoning, Descriptive Questions.)
