66CS1: Design And Analysis Of Algorithms

UNIT - 1
Mathematical foundations, summation of arithmetic and geometric series, $n$, $n^2$, bounding summations using integration, recurrence relations, solutions of recurrence relations using technique of characteristic equation and generating functions, Complexity calculation of various standard functions, principles of designing algorithms

UNIT - 2
Asymptotic notations of analysis of algorithms, analyzing control structures, worst case and average case analysis, amortised analysis, application of amortized analysis, Sorting networks, comparison networks, biotonic sorting network, advanced data structures like Fibonacci heap, disjoint set representation, red and black trees and their applications.

UNIT - 3
Divide and conquer basic strategy, binary search, quick sort, merge sort, matrix operations, Greedy method – basic strategy, application to job sequencing with deadlines problem, minimum cost spanning trees, single source shortest path etc.

UNIT - 4
Dynamic Programming basic strategy, multistage graphs, all pairs shortest path, single source shortest paths, optimal binary search trees, traveling salesman problem, Maximum flow networks.

UNIT 5
Basic Traversal and Search Techniques, breadth first search and depth first search, connected components. Backtracking basic strategy, 8-Queen's problem, graph colouring, Hamiltonian cycles etc, Approximation algorithm and concepts based on approximation algorithms.

UNIT 6
NP-hard and NP-complete problems, basic concepts, non-deterministic algorithms, NP-hard and NP-complete, decision and optimization problems, graph based problems on NP Principle, Computational Geometry, Approximation algorithm.

Text Books:
· Design & Analysis of Computer Algorithms by Aho, Pearson education. Horowitz, Sahani,
Rajsekharam,

Reference Books:

66CS2: Database Management Systems

UNIT-I
Database system concepts and Architecture – concept of relational database, Relational data model, Relational algebra, SQL-the relational database standard, introduction to PL/SQL

UNIT-II
Database design theory – Functional dependencies and normalization, relational database design algorithms, practical database design and demoralization, Relational constants, programmatic ways for implementing constraints, triggers.

UNIT-III
Physical database design – Concept of physical and logical hierarchy, storage structures like cluster, index organized table, partitions, various table storage parameters and block storage parameters, concept of index, B-trees, hash index, function index, bitmap index.

UNIT-IV

UNIT-V
Query optimization and performance tuning – Various techniques for query optimization, strong and weak equivalence, cost base optimization, Use of different storage structures in query optimization.

UNIT-VI
Transaction Processing -Transaction and system concepts, Desirable properties of transaction, Schedules and recoverability, serializability of schedules, concurrency control, lockbase protocols and time stamp based protocols, read consistency.

BOOKS:
Reference Books
· Database System Concepts by Henry Korth and Others
· Database Systems by Connolly, 3rd edition, Pearson Education.

66CS3: Computer Networks

Unit I:
Uses of Computer Networks, Network Hardware:- LAN, WAN, MAN, Network Software-protocol hierarchies, design issues for layers, connection oriented and connection less services, service primitives, Services to protocol relationship.

Unit II:

Unit III:
Data Link Layer: Error Detection and Correction, Flow Control protocols, Error control protocols, HDLC, PPP.

Unit IV:

Unit V:

Unit VI:
· Wide Area Networks: Packet switching principles, X.25, ATM and frame relay: ATM protocol
Architecture, Cells, Cell format, Segmentation and reassembly in ATM, ATM adaptation Layer 3/4, ATM adaptation Layer 5;
· Introduction to Frame relay and frame relay protocol architecture.

**Text Book:**
· Computer Networks: 4th ed by Andrew S. Tanenbaum, Pearson Education.

**Reference Book:**

**66CS4: Microprocessor & Interfacing**

**UNIT –I:**
8085 based Microprocessor organization, 8085 Instruction set, Assembly language programming.

**UNIT-II:**
Memory & I/O organization, Address decoding, Interrupts of 8085, Basic timing diagram of 8085.

**UNIT-III:**
8085 Interfacing with 8255, Simple keyboard matrix interfacing with 8085, Interfacing of 7 segment LED with 8085, Introduction to DMA using HOLD/HLDA Signals.

**UNIT-IV:**
8279 keyboard/display controller, Interfacing of Stepper motor with 8085.

**UNIT-V:**
8051 architecture, code/data memory interfacing, I/O interfacing, Address decoding logic, Interrupts.

**UNIT-IV:**
Serial data communication, UART operation, 8051 Instruction set, assembly language programming.

**TEXT BOOKS:**
· Microprocessor Architecture, Programming and Applications with 8085/8080 A by R.S. Gaonkar, Wiley Eastern Ltd.
· The 8051 Microcontroller & Embedded Systems. By Mazidi&Mazidi, Pearson Education
· Microcontrollers: Architecture, Programming, Interfacing & System design by Rajkamal, Pearson Education.
· The 8 bit microprocessor & Microcontroller by V.J. Vibhute.

66CS5: Software Engineering and Project Management

Unit 1

Unit 2

Unit 3:

Unit 4

Unit 5
Unit 6

Text Book:
· Software Engineering- A Practitioner's Approach (Sixth Edition)- Roger Pressman (TMH)

Reference Books:
· Software Engineering (Seventh Edition)- Ian Summerville, Pearson Education.
· Software Engineering Theory and Practice by Pfleeger, Pearson Education.
· Software Engineering- Schaum's Series (TMH)