

MCA I Year II Semester Subject Code: 24MCA2004 Design and Analysis of Algorithms

Contact Hour	Unit No.	Topic Name	Teaching Methodology	Remarks
1	1	Introduction to Algorithm, Pseudocode	Blackboard	
2	1	Performance Analysis: Space and Time Complexity	Blackboard	
3-4	1	Asymptotic Notation – Big-O, Omega, Theta	Blackboard	
5	1	Little-oh Notation	Blackboard	
6	1	Probabilistic Analysis	Blackboard	
7-8	1	Amortized Analysis	Blackboard	
9	2	Divide and Conquer: General Method	Blackboard	
10	2	Binary Search	Blackboard	
11	2	Merge Sort	Blackboard	
12	2	Quick Sort	Blackboard	
13-14	2	Strassen's Matrix Multiplication	Blackboard	
15	2	Greedy Method: General Method	Blackboard	
16-17	2	Job Sequencing with Deadlines	Blackboard	
18-19	2	Minimum Cost Spanning Tree Algorithms	Blackboard	
20-21	2	Single Source Shortest Path	Blackboard	
22-23	2	Knapsack Problem (Greedy)	Blackboard	
24	3	Dynamic Programming: General Method	Blackboard	
25-26	3	Matrix Chain Multiplication	Blackboard	
27-29	3	Optimal Binary Search Trees	Blackboard	
30	3	0/1 Knapsack Problem (DP)	Blackboard	
31-32	3	All-Pairs Shortest Path (Floyd-Warshall)	Blackboard	
33-34	3	Travelling Salesperson Problem (TSP - DP)	Blackboard	
35	4	Backtracking: General Method	Blackboard	
36-37	4	N-Queens Problem	Blackboard	
38-39	4	Sum of Subsets Problem	Blackboard	
40	4	Graph Coloring	Blackboard	
41-42	4	Hamiltonian Cycles	Blackboard	
43	5	Branch and Bound: General Method	Blackboard	
44-45	5	TSP – LC Branch and Bound	Blackboard	
46-47	5	0/1 Knapsack – LC and FIFO Branch and Bound	Blackboard	
48-49	5	Basic Concepts of NP-Hard and NP-Complete	Blackboard	
50	5	Non-deterministic Algorithms	Blackboard	

51	5	NP-Hard and NP-Complete Classes with Examples	Blackboard	
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