Design & Analysis of Algorithms

Unit-III

Part – A (Short Answer Questions)

S.No.	Questions	BT	CO	PO
1	Define Greedy Method.	L2	CO1	PO1
2	Define Job Sequencing with Deadlines Problem.	L3	CO2	PO2
3	Define Minimum Cost Spanning Tree.	L2	CO3	PO1
4	Define Knapsack Problem.	L3	CO3	PO2
5	Define Prim's Algorithm.	L2	CO1	PO1
6	Define Kruskal's Algorithm.	L1	CO2	PO1
7	Define Single Source Shortest Path Problem.	L3	CO4	PO2
8	Define Dynamic Programming.	L1	CO5	PO1
9	List the features of Dynamic Programming.	L2	CO3	PO2
10	Distinguish Greedy Method and Dynamic Programming.	L1	CO2	PO2

Part – B (Long Answer Questions)

Q.No.	Question	BT	CO	PO
11(a)	What is the Principle of Optimality? Explain how the Travelling Salesperson Problem uses the Dynamic Programming technique with an example. Also find the space and time complexity.	L3	CO3	PO3
11(b)	Explain the Single Source Shortest Path Problem with an example.	L1	CO1	PO2
12(a)	Give the statement of the Reliability Design Problem and explain it with a suitable example.	L2	CO2	PO2
12(b)	Explain Prim's Algorithm with an example.	L3	CO3	PO3
13(a)	Explain Kruskal's Algorithm with an example.	L1	CO1	PO3
13(b)	What is Reliability Design? Explain with an example.	L2	CO3	PO2
14(a)	Explain the Optimal Binary Search Tree Algorithm with an example.	L3	CO4	PO3
14(b)	Explain the 0/1 Knapsack Problem with an example.	L1	CO3	PO3
15(a)	What is the All-Pairs Shortest Path Problem (APSP)? Discuss Floyd's APSP Algorithm and analyze its complexity.	L2	CO1	PO2
15(b)	Describe the Travelling Salesperson Problem and discuss how to solve it using Dynamic Programming.	L4	CO2	PO3
16(a)	Explain Kruskal's Algorithm with an example.	L1	CO3	PO3
16(b)	Describe the Dynamic 0/1 Knapsack Problem. Find an optimal solution for the Dynamic Programming 0/1 Knapsack instance for n = 3, m = 6, profits (p_1, p_2, p_3) = (1, 2, 5), and weights (w_1, w_2, w_3) = (2, 3, 4).	L1	CO1	PO3