Design & Analysis of Algorithms

Unit IV

Part – A (Short Answer Questions)

S.No.	Questions	BT	CO	PO
1	Define: (i) Feasible Solution (ii) Optimal Solution.	L1	CO2	PO1
2	Define Greedy Method.	L2	CO3	PO1
3	What is a Spanning Tree? Give an example.	L3	CO2	PO1
4	What is Job Sequencing with Deadline?	L1	CO1	PO1
5	What is a Minimum Spanning Tree?	L4	CO2	PO2
6	What is Single Source Shortest Path?	L4	CO1	PO2
7	What is the time complexity of Job Sequencing with Deadline?	L4	CO3	PO2
8	What is the time complexity of Spanning Tree algorithms?	L4	CO1	PO2
9	What is the time complexity of Single Source Shortest Path?	L1	CO2	PO2
10	Distinguish between Prim's and Kruskal's Spanning Tree Algorithms.	L1	CO3	PO2

Part – B (Long Answer Questions)

Q.No.	Question	BT	CO	PO
11(a)	Find an optimal solution to the Knapsack instance with n = 7 objects and knapsack capacity m = 15. The profits are (10, 5, 15, 7, 6, 18, 3) and weights are (2, 3, 5, 7, 1, 4, 1).	L1	CO1	PO3
11(b)	State the Job Sequencing with Deadline Problem.	L1	CO2	PO1
12(a)	Discuss the Single Source Shortest Path (Dijkstra's) Algorithm with a suitable example and determine its time complexity.	L2	CO2	PO2
12(b)	What is a Spanning Tree? Explain Prim's Minimum Cost Spanning Tree Algorithm with a suitable example and determine its time complexity.	L3	CO1	PO3
13(a)	Find an optimal sequence for n = 5 jobs where profits (P_1, P_2, P_3, P_4, P_5) = (20, 15, 10, 5, 1) and deadlines (d_1, d_2, d_3, d_4, d_5) = (2, 2, 1, 3, 3).	L1	CO2	PO3
13(b)	What is a Minimum Cost Spanning Tree? Explain Kruskal's Minimum Cost Spanning Tree Algorithm with a suitable example and determine its time complexity.	L4	CO3	PO3
14(a)	State the Greedy Knapsack Problem. Write the algorithm for Greedy Knapsack and compute its time complexity.	L1	CO1	PO3
14(b)	Write an algorithm for Job Sequencing with Deadlines.	L1	CO2	PO3
15(a)	Write the algorithm for Kruskal's Algorithm.	L1	CO2	PO3
15(b)	Write the algorithm for Prim's Algorithm.	L1	CO1	PO3
16(a)	Write the algorithm for Dijkstra's Algorithm.	L3	CO2	PO3
16(b)	Write the applications of the Greedy Method.	L3	CO3	PO2