R14

ANURAG Engineering College
(An Autonomous Institution)
III B.Tech I Semester Supplementary Examinations, Dec–2023/Jan-2024
DESIGN AND ANALYSIS OF ALGORITHMS
(COMPUTER SCIENCE AND ENGINEERING)

Time: 3 Hours **Max.Marks:75**

Section – A (Short Answer type questions) (25 Marks)
Answer All Questions

		Course Outcome	B.T Level	Marks
1.	Define Time Complexity.	CO1	L1	2M
2.	Explain Probabilistic analysis of algorithms.	CO1	L2	3M
3.	Define a graph.	CO2	L1	2M
4.	Describe Spanning Tree and Minimum Spanning Tree.	CO2	L2	3M
5.	Briefly explain traveling sales person problem?	CO3	L2	2M
6.	State the principle of optimality in general	CO3	L1	3M
7.	Write the applications of Branch and Bound design methodology.	CO4	L1	2M
8.	What is sum of subsets problem?	CO4	L1	3M
9.	What is NP Complete class?	CO5	L1	2M
10.	Explain non-deterministic algorithms.	CO5	L2	3M

Section B (Essay Questions)
Answer all questions, each question carries equal marks. **(5 x 10M = 50M)**

			Course Outcome	B.T Level	Marks
11.	A)	Explain the theta notation used in algorithm analysis.	CO1	L3	10M
		OR			
	B)	Explain Merge sort algorithm and sort the elements 36, 25, 40, 2, 7, 80, 15.	CO1	L2	6M
12.	A)	Explain how BFS can be used to identify the connected components.	CO2	L3	5M
		OR			
	B)	Write an algorithm for Job Sequencing with deadlines.	CO2	L2	5M
13.	A)	Explain Travelling Sales Person problem with an example.	CO3	L3	10M
		OR			
	B)	Explain 0/1 knapsack problem in Dynamic Programming.	CO3	L2	10M
14.	A)	Describe Backtracking technique to m-coloring graph.	CO4	L3	10M
		OR			
	B)	Draw the portion of the state space tree generated by LC branch and bound for an instance N=4, (P1, P2, P3, P4)= (10,10,12,18), (w1, w2, w3, w4)=(2, 4, 6, 9), and M=15.	CO4	L2	10M
15.	A)	Show that the Hamiltonian path problem is NP-complete.	CO5	L2	10M
		OR			
	B)	Differentiate between NP-complete and NP-Hard.	CO5	L3	10M