Course Code: 1960525 Roll No: **MLRS-R19**

MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

III B.Tech II Sem Supply End Examination, January 2023

Design and Analysis of Algorithms

(Computer Science and Engineering)

Time: 3 Hours. **Max. Marks: 70**

Note: 1. Question paper consists: Part-A and Part-B.
2. In Part – A, answer all questions which carries 20 marks.
3. In Part – B, answer any one question from each unit.
Each question carries 10 marks and may have a, b as sub questions.

PART- A

(10*2 Marks = 20 Marks)

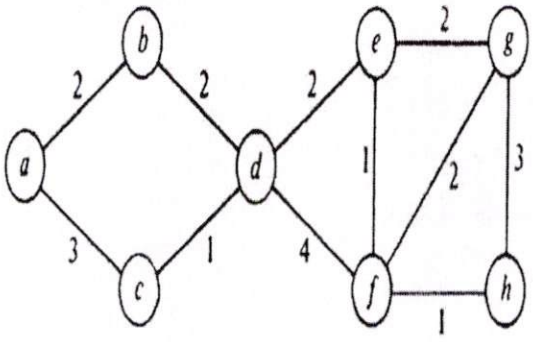
1.	a)	Define the term Time Complexity	2M	CO1	BL1
	b)	What is mean by Divide and Conquer Strategy?	2M	CO1	BL1
	c)	Define Adjacency Set.	2M	CO2	BL1
	d)	What is mean by Backtracking?	2M	CO2	BL1
	e)	What is the beauty of Dynamic Programming?	2M	CO3	BL2
	f)	Define the terms feasible and optimal solutions.	2M	CO3	BL1
	g)	Write the application area of Greedy Strategy.	2M	CO4	BL3
	h)	Define fractional knapsack problem.	2M	CO4	BL2
	i)	What is Dead-node?	2M	CO5	BL1
	j)	Define the term polynomial.	2M	CO5	BL2

PART- B

(10*5 Marks = 50 Marks)

2	a)	Compare and Contrast Brute Force and Divide and Conquer strategy.	5M	CO1	Bl3
	b)	Write the worst case analysis of Binary Search and guess its complexity.	5M	CO1	Bl3
		OR			
3		Write the algorithm to merge two sorted lists. Apply merge sort algorithm on the following list of number. 9 88 7 6 55 4 33 2 11	10M	CO1	Bl3
4	a)	List the drawbacks of Backtracking Algorithms.	5M	CO2	Bl3
	b)	Write the application area of find algorithm.	5M	CO2	Bl3
		OR			
5		Explain 4-quenes problem with feasible solutions.	10M	CO2	Bl2

6	a)	Define travelling sales person problem.	5M	CO 3	Bl2
	b)	Compare and contrast Dynamic Programming and Greedy strategy.	5M	CO 3	Bl3
		OR			
7		Compute optimal binary search for the identifier set (a1,a2,a3,a4)=(cout, float, int, while) with probabilities p1=1/20, p2=1/5, p3=1/10, p4=1/20, q0=1/5, q1=1/10, q2=1/5, q3=1/20 and q4=1/20, Compute w(I,J) , r(I, J) and c(I, J).	10M	CO3	Bl3
8	a)	Explain the characteristics of Greedy algorithms.	5M	CO 4	Bl2
	b)	Write the application area of Greedy strategy.	5M	CO 4	Bl3
		OR			
9		Find the minimum cost spanning tree for the following graph using Prim's algorithm and calculate its time complexity.	10M	CO4	Bl3



10	a)	Define the terms NP-Hard and NP-Complete.	5M	CO5	Bl2
	b)	Explain the strategy to prove that a problem is NP-Hard.	5M	CO5	Bl2
		OR			
11		What is LC – Search? Discuss LC – Search algorithm with suitable example.	10M	CO5	Bl2

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