Hall Ticket No: | | | | | | | | | | | Question Paper Code: A8516

VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

II B. Tech II Semester Regular Examinations, July – 2024

(Regulations: VCE-R22)

DESIGN AND ANALYSIS OF ALGORITHMS

(Common to Computer Science and Engineering, Computer Science and Engineering (AIML), Information Technology & Artificial Intelligence and Machine Learning)

Date: 16 July, 2024 FN **Time: 3 hours** **Max Marks: 60**

Answer All Questions

PART – A

1.	a)	Distinguish the best-case, average-case, and worst-case efficiency of an algorithm.	CO1	L2	*1M*
	b)	Write down the control abstraction for the divide and conquer strategy.	CO1	L2	*1M*
	c)	Mention the Properties of Greedy method.	CO2	L1	*1M*
	d)	Time Complexity of job sequencing with deadlines.	CO2	L1	*1M*
	e)	List the difference between an optimal solution and a feasible solution.	CO3	L1	*1M*
	f)	What is the knapsack problem?	CO3	L1	*1M*
	g)	Define State Space Tree.	CO4	L1	*1M*
	h)	Define E node and live node.	CO4	L1	*1M*
	i)	When can a path be terminated in a branch and bound algorithm?	CO5	L2	*1M*
	j)	Define P and NP problems.	CO5	L1	*1M*

PART – B

2.	a)	Illustrate briefly on Big oh Notation, Omega Notation and Theta Notations. Depict the same graphically and explain.	CO1	L3	*5M*
	b)	Write the algorithm for merge sort and Trace 76, 23, 45, 13, 98, 52, 84 and 18.	CO1	L2	*5M*
		(OR)			
	c)	Apply Strassen's algorithm for matrix multiplication to multiply the matrices with an example and justify how the Strassen's algorithm is better.	CO1	L3	*5M*
	d)	Apply quick sort technique and arrange the records with the following index values in the ascending order. 2, 3, 8, 5, 4, 7, 6, 9, 1. Explain with algorithm and analyze time complexity.	CO1	L3	*5M*
3.	a)	Write the Dijkstra's Algorithm.	CO2	L3	*5M*
	b)	Apply prims algorithm to find Minimum spanning Tree.	CO2	L3	*5M*

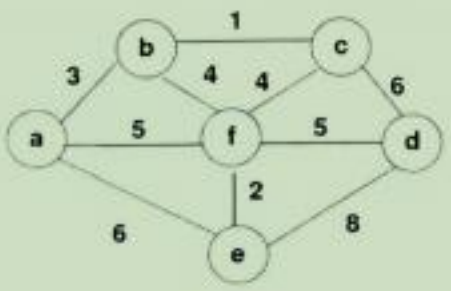

Fig.1

(OR)

	c)	Solve the following instance of Knapsack problem by Greedy Method. W=15, n=6. (p1, p2 ,p3, p4, p5, p6) = (40, 35, 18, 4, 10, 2) (w1, w2, w3, w4, w5, w6) = (5, 7, 2, 4, 5, 1)	CO2	L3	*5M*
	d)	Write the Kruskal's algorithm for finding minimum Spanning tree.	CO2	L3	*5M*

Cont...2