Code No. 3468

OSMANIA UNIVERSITY
FACULTY OF ENGINEERING
UNIVERSITY COLLEGE OF ENGINEERING (AUTONOMOUS)
B.E. (CSE) IV-Semester (Main) Examinations August/September 2022

DESIGN AND ANALYSIS OF ALGORITHMS

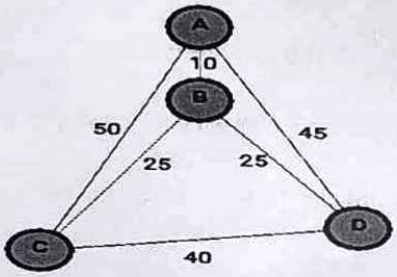
Time : 3 hours **Max. Marks : 70**

Note : *i) Answer **Question No. 1** (Compulsory) and answer any **four questions** from the remaining questions (2- 7).*
ii) Answers must be written in same order as they occur in the Question Paper.
*iii) **Missing data, if any, may suitably be assumed.***

		Marks	BT	CO
1. a)	What do you understand by worst-case time complexity.	2	1	1
b)	When do you apply dynamic programming to solve a problem.	2	3	3
c)	What is minimum spanning tree. What are its advantages.	2	2	2
d)	State cook's theorem.	2	1	7
e)	What is satisfiability.	2	1	6
f)	Differentiate between Greedy and Dynamic programming approaches.	2	2	5
g)	Discuss briefly about asymptotic notations.	2	1	1
2. a)	How do you analyze in algorithm. What is basis of analysis. Explain.	10	2	1
b)	Solve the following recurrence relations and find the time complexity using substitution and Master's method a) T(n)=7T(n/2)+18n2 b) T(n) = 6T(n/3)+n2 logn	4	3	3
3. a)	Write Knapsack algorithm.	6	2	4
b)	Solve the following using Knapsack problem by Greedy method w = 60 kg, (w1, w2, w3, w4, w5) = (5, 10, 15, 22, 25), (p1, p2, p3, p4, p5) = (30, 40, 45, 77, 90).	8	3	4
4. a)	Explain Network flow Algorithms.	6	2	5
b)	Write Non Deterministic algorithm for sorting and Construct a B-tree of order 4 with the following elements **10,20,30,40,50,60,70,80,90,100**	8	3	6

(P.T.O.)

5.	a)	What are tractable and intractable problems.	4	2	7
	b)	What are computability classes. Illustrate each with a suitable example.	10	2	7
6.	a)	Discuss about Approximation Algorithms.	8	2	8
	b)	Explain about NP-P SPACE.	6	2	8
7.	a)	Solve TSP for the following graph using Dynamic Programming starting from node A	7	3	4



	b)	Write N-Queens algorithm. Illustrate with an example.	7	3	4

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