Code No: **R32053** **R10** **Set No. 1**

III B.Tech II Semester Supplementary Examinations, November - 2018

DESIGN AND ANALYSIS OF ALGORITHMS

(**Common to** Computer Science Engineering and Information Technology)

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

Answer any FIVE Questions
All Questions carry equal marks

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1	a)	Give the definition and graphical representation of Asymptotic notations.	[8M]
	b)	Give the algorithm to check whether all the elements in a given array of n elements are distinct. Find the worst case complexity of the same.	[7M]
2	a)	What is a Spanning tree? Explain Prim's Minimum cost spanning tree algorithm with suitable example.	[8M]
	b)	Discuss the single – source shortest paths algorithm with suitable example.	[7M]
3	a)	Write the quick sort algorithm and estimate its running time.	[7M]
	b)	Solve Strassent's matrix multiplication using divide and conquer.	[8M]
4	a)	Differentiate between divide and conquer method and greedy method.	[7M]
	b)	State the Greedy Knapsack? Find an optimal solution to the Knapsack instance n=3, m=20, (P1, P2, P3) = (25, 24, 15) and (W1, W2, W3) = (18, 15, 10).	[8M]
5	a)	Suggest an approximation algorithm for traveling sales person problem. Assume that the cost function satisfies the triangle inequality.	[8M]
	b)	How the reliability of a system is determined using dynamic programming? Explain.	[7M]
6	a)	The knight is placed on the first block of an empty board and, moving according to the rules of chess, must visit each square exactly once. Solve this problem using Backtracking procedure.	[8M]
	b)	Write an algorithm for the graph coloring.	[7M]
7	a)	What is branch and bound? Explain about the FIFO branch and bound solution.	[7M]
	b)	Give the 0/1 Knapsack LCBB algorithm. Explain how to find optimal solution using variable – tuple sized approach.	[8M]
8	a)	Using an example prove that, satisfiability of boolean formula in 3-Conjunctive Normal form is NP-Complete.	[8M]
	b)	Briefly explain Non deterministic algorithms.	[7M]

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