Q.P. Code: 18MC9122 **R18**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

MCA II Year II Semester Regular Examinations October-2020

DESIGN AND ANALYSIS OF ALGORITHMS

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	**a**	Differentiate between Bigoh and omega notation with example.	**6 M**
	b	Define time complexity and space complexity. Write an algorithm for adding N natural numbers and find the space required by that algorithm.	**6 M**

OR

2	**a**	Explain Strassen's algorithm for matrix multiplication with the help of an example.	**6 M**
	b	Discuss the General plan for analyzing efficiency of Non recursive & Recursive algorithms Understand and Selection Sort with example.	**6 M**

UNIT-II

3	**a**	What is a Minimum Cost Spanning tree? Explain Kruskal's Minimum cost spanning tree algorithm with suitable example.	**6 M**
	b	Find an optimal solution to the knapsack instance n=4 objects and the capacity of knapsack m=15, profits (10, 5, 7, 11) and weight are (3, 4, 3, 5).	**6 M**

OR

4	**a**	Explain the Travelling sales man problem.	**6 M**
	b	Write the algorithm to compute 0/1 Knapsack problem using dynamic programming and explain it.	**6 M**

UNIT-III

5	**a**	Explain any one application back tracking with example.	**6 M**
	b	Describe in detail graph coloring using back tracking.	**6 M**

OR

6	**a**	Determine Sum of subsets problem.	**6 M**
	b	Explain Hamiltonian cycles with examples.	**6 M**

UNIT-IV

7	**a**	Explain the general method of branch and bound.	**6 M**
	b	Explain control abstraction of LC-branch and bound.	**6 M**

OR

8		State 0/1 knapsack problem and design an algorithm of LC Branch and Bound and find the solution for the knapsack instance with any example.	**12 M**

UNIT-V

9		Write the non-deterministic sorting algorithm and also analyze its complexity.	**12 M**

OR

10		What is halting problem explain with an example?	**12 M**

*** END ***