Q.P. Code: 18CS0516 **R18**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year I Semester Supplementary Examinations December-2021

DESIGN AND ANALYSIS OF ALGORITHM

(Common to CSE & CSIT)

Time: 3 hours Max. Marks: 60

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	a	What is an Algoritham?	L1	2M
	b	Define the divide and conquer method.	L2	2M
	c	What is Knapsack problem?	L1	2M
	d	Define Branch-and-Bound method.	L1	2M
	e	What is a decision problem?	L1	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	What is asymptotic notation? Explain different types of notations with examples.	L1	5M
	b	Illustrate an algorithm for (i) Finding factorial of n number (ii) Sum of n natural numbers	L2	5M

OR

3	a	Explain the collapsing rule for Find algorithm with example.	L1	5M
	b	Determine in steps of Union and Find algorithms with example.	L2	5M

UNIT-II

4		What is divide and conquer strategy? Explain the working strategy of Binary Search and find element 60 from the below set by using the above technique: {10, 20, 30,40,50, 60,70}. Analyze time complexity for binary search.	L3	10M

OR

5		Explain the Strassen's algorithm for matrix multiplication and analyze time complexity.	L1	10M

UNIT-III

6	a	Explain in detail about greedy method and its applications	L1	5M
	b	Simplify the algorithm for Knapsack problem and analyze time complexity.	L1	5M

OR

7		Explain 0/1 knapsack problem by using dynamic programming with an examples.	L1	10M

UNIT-IV

8	a	Explain thc principles of FIFO branch and bound.	L1	6M
	b	Recall the graph coloring. Explain in detail graph coloring with an example.	L2	4M

OR

9		Distinguish in detail 8-queens problem using back tracking with state space tree.	L3	10M

UNIT-V

10		Differentiate between NP- complete and NP-hard problems.	L3	10M

OR

11		Estimate the strategy to prove that a problem steps of NP-hard.	L2	10M

END