Q.P. Code: 19CS0516 **R19**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

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

DESIGN AND ANALYSIS OF ALGORITHMS

(Common to CSE & CSIT)

Time: 3 hours Max. Marks: 60

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

UNIT-I

1 **a** What is asymptotic notation? Explain different types of notations with examples. **L2 6M**

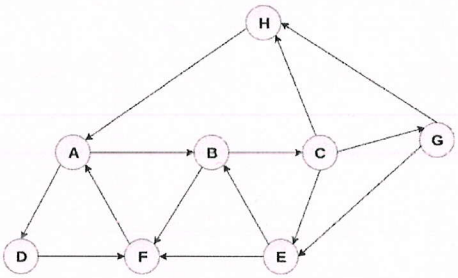
b Illustrate an algorithm for (i) Finding factorial of n number (ii) Sum of n natural numbers. **L2 6M**

OR

2 Demonstrate Towers of Hanoi with algorithm and example. **L3 12M**

UNIT-II

3 Explain DFS algorithm and trace out minimum path for DFS for the following example. **L5 12M**



OR

4 Describe Binary search algorithm with the following example **L2 12M**
5, 9, 17, 23, 25, 45, 59, 63, 71, 89.

UNIT-III

5 Elaborate job sequencing with deadlines by using greedy method where given the jobs, their deadlines and associated profits as shown below. Calculate maximum earned profit. **L6 12M**

Jobs	J1	J2	J3	J4	J5	J6
Deadlines	5	3	3	2	4	2
Profits	200	180	190	300	120	100

OR

6 **a** Explain in detail about greedy method and its applications. **L2 6M**

b Simplify the algorithm for Knapsack problem and analyze time complexity. **L4 6M**

UNIT-IV

7 **a** Explain the principles of FIFO branch and bound. **L2 6M**

b Recall the graph coloring. Explain in detail graph coloring with an example. **L5 6M**

OR

8	Construct the LC branch and bound search. Consider knapsack instance n=4 with capacity M=15 such that pi={10,10,12,18},wi={2,4,6,9}apply LC branch and bound technique.	L6	12M

UNIT-V

9	Construct the non-deterministic algorithms with example.	L3	12M

OR

10	Determine the classes NP-hard and NP-complete problem with example.	L5	12M

*** END ***