| O.P.Code: 20CS0523 | R20 | H.T.No. | | | | | | | | | | |
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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)

**B.Tech II Year II Semester Regular & Supplementary Examinations June-2024**

**DESIGN AND ANALYSIS OF ALGORITHMS**
(Common to CCC & CAI)

**Time: 3 Hours** **Max. Marks: 60**

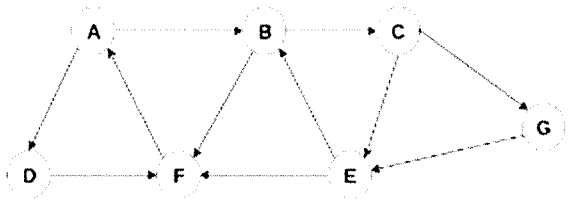
(Answer all Five Units **5 x 12** = **60** Marks)

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | What do you mean by algorithm? List some of the properties of it. | CO1 | L1 | 4M |
| | b | Classify the rules of Pseudo code for Expressing Algorithms. | CO1 | L2 | 8M |
| | | **OR** | | | |
| 2 | | Demonstrate Towers of Hanoi with algorithm and example. | CO1 | L3 | 12M |

**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 3 | | Elaborate BFS algorithm and trace out minimum path for BFS for the following example. | CO2 | L6 | 12M |




**OR**

| | | | | | |
|---|---|---|---|---|---|
| 4 | a | Compare between BFS and DFS techniques. | CO2 | L4 | 4M |
| | b | What is divide and conquer strategy? Write briefly about general method and its algorithm. | CO2 | L3 | 8M |

**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 5 | a | Simplify the algorithm for Knapsack problem and analyze time complexity. | CO3 | L4 | 6M |
| | b | What is minimum cost spanning tree and write the algorithm of pseudo code for kruskals algorithm. | CO3 | L3 | 6M |
| | | **OR** | | | |
| 6 | | Explain 0/1 knapsack problem by using dynamic programming with an examples. | CO3 | L2 | 12M |

**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| 7 | | Distinguish in detail 8-queens problem using back tracking with state space tree. | CO4 | L4 | 12M |
| | | **OR** | | | |
| 8 | a | Explain the principles of FIFO branch and bound. | CO4 | L2 | 6M |
| | b | Explain the principles of LIFO branch and bound. | CO4 | L2 | 6M |

**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| 9 | | Determine the classes NP-hard and NP-complete problem with example. | CO5 | L5 | 12M |
| | | **OR** | | | |
| 10 | | How to make reduction for 3-sat to clique problem? and Explain | CO5 | L3 | 12M |

***** END *****