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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech III Year I Semester Supplementary Examinations August-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 Briefly explain the time complexity and space complexity estimation with example. 6M  
b Describe about the performance analysis in detail with Example. 6M

**OR**

- 2 a Briefly explain Binary tree traversals with examples? 6M  
b Define Disjoint sets? Explain different types of disjoint sets operations with examples. 6M

**UNIT-II**

- 3 a Write about Binary Search algorithm with Example and find Time complexity. 6M  
b Write about Merge sort algorithm with example & time complexity. 6M

**OR**

- 4 a Explain job sequencing deadlines by Greedy technique with your own example. 6M  
b What is spanning tree? Explain the Prim's algorithm with an example. 6M

**UNIT-III**

- 5 a Describe in detail 8-queens problem using back tracking. 6M  
b Briefly explain the optimal binary search trees with example. 6M

**OR**

- 6 a Describe in detail Hamiltonian cycles using back tracking. 5M  
b Explain any one application of dynamic programming with example. 7M

**UNIT-IV**

- 7 a Apply branch and bound to 0/1 knapsack problem and elaborate it. 6M  
b Explain the method of reduction to solve TSP problem using branch and bound. 6M

**OR**

- 8 a Briefly explain the FIFO brach and bound solution with example. 6M  
b Briefly explain the LC brach and bound solution with example. 6M

**UNIT-V**

- 9 a Distinguish between deterministic and non-deterministic algorithms. 6M  
b Write the non-deterministic sorting algorithm and also analyze its complexity. 6M

**OR**

- 10 a Explain the strategy to prove that a problem is NP-hard. 6M  
b Explain the satisfiability problem and write the algorithm. 6M

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