

**SECTION - A**

2. Explain Divide & Conquer method also write mid-point algorithm. Give the best case and worst case complexity of it. 20

3. Explain Trees in data structure. Describe Red Black algorithm with example. 20

**SECTION - B**

4. What is dynamic programming ? Explain 0/1 Knapsack problem using greedy method and also solve it  $n=3, m=50, w_i=(10,20,30), P_i=(60,100,120)$ . 20

5. (a) What is backtracking method to find a solution of a problem ? Solve 8-Queens problem with example. 10  
(b) Explain Hamiltonian cycles with example. 10

**SECTION - C**

6. Explain NP-Hard and NP-complete problems with example. Explain Cook's theorem. 20

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**SECTION - D**

7. Explain string matching technique to find solution of a problem. Explain Boyer-Moore algorithm with example. 20

8. What is parallel algorithm ? Explain PRAM Models and Merge Sort algorithm for handling conflicts. 20

9. What is approximation algorithm ? Explain absolute and fully approximation schemes. 20

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Roll No. ....

**22644**

**M. Tech. 2nd Semester (CSE) CBCS  
Scheme Examination – June, 2023**

**ALGORITHM DESIGN**

Paper : MTCSE22C2

*Time : Three Hours ]*

*[ Maximum Marks : 100*

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

*Note : Question No. 1 is compulsory. Attempt total five questions by selecting at least one question from each Section.*

1. Explain the following : 4 × 5 = 20
- (a) Array doubling.
  - (b) NP-complete problems.
  - (c) 0/1 Knapsack problem.
  - (d) PRAM model

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