

**Exam. Code : 206702**  
**Subject Code : 4724**

**M.Sc. Computer Science 2nd Semester (Batch 2021-23)**  
**MCS-203 : DESIGN & ANALYSIS OF ALGORITHMS**

Time Allowed—3 Hours] [Maximum Marks—100

**Note :—** Attempt **FIVE** questions in all, selecting at least **ONE** question from each section. The **FIFTH** question may be attempted from any section. All questions carry equal marks.

**SECTION—A**

1. What is running time of an algorithm ? How is it calculated and represented ? 5,15
2. Express linear search and binary search in algorithmic form. Derive their performance analysis using the asymptomatic notation. 10,10

**SECTION—B**

3. Discuss the conceptual steps of the Divide-and-Conquer Paradigm. Explain it in making selection of elements. 12,8
4. Explain the quicksort algorithm. Why is it efficient ? 12,8

### SECTION—C

5. Explain Kruskal's algorithm clearly explaining the problem statement and the proposed solution. 5,15
6. Write short notes on :—
- (a) The Knapsack problem.
  - (b) Minimum Cost Spanning Tree. 20

### SECTION—D

7. Suppose a network of cities is given. Write an algorithm to search it following the depth first approach. 5,15
8. Explain the following :—
- (a) 8-queens problem
  - (b) Travelling Salesman problem
  - (c) Binary Search Trees. 6,7,7