

FACULTY OF INFORMATICS**M.C.A. (2 Years Course) II-Semester (CBCS) (Backlog) Examination, March /April 2024****Subject: Design and Analysis of Algorithms****Time: 3 Hours****Max. Marks: 70****Note: I. Answer one question from each unit. All questions carry equal marks.****II. Missing data, if any, may be suitably assumed.****Unit – I**

1. a) What are the characteristics of an Algorithm? How to evaluate the performance of an Algorithm?
b) Explain about Randomized Algorithms.

(OR)

2. a) What is Queue? Explain about various Queue Operations.
b) Give an account on Graph Data Structures.

Unit – II

3. a) Define Divide and Conquer? Illustrate the algorithm for merging two sorted sets using Auxiliary Storage.
b) Discuss about Strassen's Matrix Multiplication Problem.

(OR)

4. a) Describe the Algorithm for greedy strategies for the knapsack problem.
b) Explain about the Greedy algorithm for sequencing unit time jobs with deadlines and profits.

Unit – III

5. a) Discuss about Multistage graph algorithm corresponding to forward approach.
b) Explain about the algorithm for all pairs shortest path Problem.

(OR)

6. a) What is Binary Tree? Describe in order and pre order traversal techniques with example.
b) Illustrate the Breadth First Search Algorithm with Example.

Unit – IV

7. a) What is Back Tracking? Explain about Recursive Backtracking Algorithm.
b) Discuss about the solution for 8-Queens Problem.

(OR)

8. a) Explain about Graph Coloring Problem.
b) Discuss about Travelling Salesperson Problem.

Unit – V

9. a) Illustrate Cook's Theorem.
b) Give an account on Non-Deterministic Sorting Algorithm.

(OR)

10. a) Discuss about Node Cover Decision Problem.
b) Explain about NP-Hard Code Generation Problem.

**