Roll No. | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 07

B.Sc. (Artificial Intelligence & Machine Learning) (Sem.–3)

DESIGN AND ANALYSIS OF ALGORITHMS

Subject Code : UGCA-1979

M.Code : 90350

Date of Examination : 14-12-22

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains SIX questions carrying TEN marks each and students have to attempt any FOUR questions.**

SECTION-A

1. Write briefly :

a) Time and Space trade-offs

b) Minimum Spanning Tree

c) NP-Hard problems

d) Travelling Salesman Problem

e) Tractable and intractable problems

f) Topological Sorting

g) Brute Force method

h) Time and Space Complexity

i) Substitution Method

j) Recursion Tree.

SECTION-B

2. What are recurrence relations? Explain how to analyse recursive algorithms using recurrence relations?

3. Explain the backtracking method with help of N-Queens Problem. (The N Queen is the problem of placing N chess queens on an N×N chessboard so that no two queens attack each other.)

4. Explain the characteristics of algorithm. How would you justify the correctness of the algorithms? Explain in detail using relevant examples.

5. How would you identify which design paradigm (greedy/divide and conquer/backtrack) should be used for different problems? Explain.

6. Discuss various ways to analyse approximation and randomized algorithms.

7. Explain the necessity for NP class based problems and explain the use of heuristic techniques.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.