

Roll No.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Total No. of Pages : 02

Total No. of Questions : 09

M.C.A. (Sem.-2)
DESIGN AND ANALYSIS OF ALGORITHMS
Subject Code : PGCA-1920
M.Code : 79616
Date of Examination : 06-07-22

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY** consisting of TEN questions carrying TWO marks each.
2. **SECTION - B & C. have FOUR** questions each.
3. **Attempt any FIVE** questions from **SECTION B & C** carrying TEN marks each.
4. **Select atleast TWO** questions from **SECTION - B & C.**

SECTION-A

1. Write briefly :

- a) Divide and Conquer
- b) Greedy approach
- c) Recursive algorithms
- d) Branch and Bound
- e) Radix Sort
- f) NP-Hard problem
- g) Graph traversal
- h) Binary search
- i) Sorted Array
- j) Knapsack problem

SECTION-B

2. Define time complexity and space complexity. Write an algorithm for adding n natural numbers and find the space required by that algorithm.
3. Write a note on the mathematical analysis of recursive and non-recursive algorithms using suitable examples.
4. Why is randomization and dynamic programming required? Explain with the help of suitable algorithms.
5. Given a set of cities and the distance between every pair of cities, the problem is to find the shortest possible route that visits every city exactly once and returns to the starting point. What is this problem called? Explain the solution in detail.

SECTION-C

6. Describe how bubble sort works and analyse the running time for the sequence 6 5 3 1 8 7 2 4.
7. Classify Sorting Algorithms and explain how insertion sort works with help of its algorithm.
8. What is string matching problem? Discuss various algorithms used for string matching.
9. What is the difference between Depth first search and Breadth first search? Explain with examples. And what are their applications.

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