A–839

Total Pages : 3 **Roll No. .....**

MCS-507

MCA/MSCIT

(Design and Analysis of Algorithm)

2nd/4th Semester Examination, 2024 (June)

Time : 2:00 Hrs. Max. Marks : 70

Note* :–** This paper is of Seventy (70) marks divided into Two (02) Sections 'A' and 'B'. Attempt the questions contained in these Sections according to the detailed instructions given therein. ***Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

Section–A

(Long Answer Type Questions) 2×19=38

***Note* :–** Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any *two* (02) questions only.

1. Write and explain the Kruskal algorithm to find the Minimum Spanning Tree of a graph with suitable example.

2. Write down the Bellman Ford algorithm to solve the single source shortest path problem also write its time complexity.

3. Write Merge sort algorithm and sort the following sequence {23, 11, 5, 15, 68, 31, 4, 17} using merge sort.

4. Discuss LCS algorithm to compute Longest Common Subsequence of two given strings and time complexity analysis.

5. (a) Write about 0/1 knapsack problem.

   (b) Explain the methodology of Dynamic programming. List the applications of Dynamic programming.

Section–B

(Short Answer Type Questions) 4×8=32

***Note* :–** Section 'B' contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. Write down and explain Floyd Warshal algorithm.

2. Explain Randomized algorithm in brief ?
3. Explain NP-complete and NP-Hard.
4. Difference between Greedy Technique and Dynamic programming.
5. Write the brute force algorithm to string matrix.
6. How to Prim's algorithm is better in finding the minimal spanning tree in comparison to the Kruskal's method.
7. What is greedy algorithm ? Explain with an illustrative example.
8. What is a branch and bound technique ? How the TSP can be solved using this technique ?

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