BT-4/J-22

44154

DESIGN AND ANALYSIS OF ALGORITHMS

Paper : PC-CS208A

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit. All questions carry equal marks.

UNIT–I

1. (a) What do you understand by a recurrence? Write a detailed note on the substitution method for solving a recurrence.

(b) Discuss the concepts of asymptotic notations and its properties.

2. What do you understand by time complexity? What is Big O notation? Write the Quick Sort algorithm and discuss its time complexity.

UNIT–II

3. What do you understand by dynamic programming? Discuss using the example of matrix chain multiplication.

4. What is a Huffman code? Discuss the greedy algorithm for constructing the Huffman code.

UNIT–III

5. What is minimum spanning tree? Discuss the Steps for finding Minimum Spanning Tree using Prim's Algorithm.

6. Discuss Bellman-Ford algorithm that computes shortest paths from a single source vertex to all of the other vertices in a weighted digraph.

UNIT–IV

7. What is a bitonic sequence? Discuss bitonic sort algorithm and its time complexity.

8. What is a sorting network? Discuss the structure of bubble sorting network.

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