

Roll No.

Total Pages: 2

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 a 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 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 bitonic sequence? Discuss bitonic sort algorithm and its time complexity.
 8. What is sorting network? Discuss the structure of bubble sorting network.
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