

BT-4/J-23

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 are asymptotic notations? Explain all notation in detail. **10**
(b) Explain the concept of Strassen Multiplication. **5**
2. What do you mean by Recurrence? Write Master Theorem for solving Recurrence. **15**

UNIT-II

3. Write Algorithm for Matrix Chain multiplication and explain it with the help of example. **15**
4. What are Red Black trees? Write algorithms for insertion and deletion in Red-Black trees. **15**

UNIT-III

5. (a) What are strongly connected components? Explain. **7.5**
(b) Differentiate between Breadth First Search and Depth First Search. **7.5**
6. (a) Illustrate the concept of NP-hard and NP-complete classes. **5**
(b) Explain the concept of Relaxation and write Bellman Ford Algorithm. **10**

UNIT-IV

7. Explain the terms Residual networks, Augmenting paths and Cuts and write Ford Fulkerson Algorithm. **15**
8. Explain the following: **15**
- i) Zero-one principle
 - ii) Comparison network
 - iii) Biotonic sorting network.
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