

Roll No.

Total Pages : 02

BT-4/M-23

44154

DESIGN AND ANALYSIS OF ALGORITHMS
PC-CS-208A

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 notations 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

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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) Bitonic sorting network.