

Roll No.

Total Pages : 02

BT-4/M-24

44154

DESIGN AND ANALYSIS OF ALGORITHMS

Paper : PC-CS-208A

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit.

Unit I

1. (a) What are Asymptotic Notations ? Also explain its types. 10
(b) Explain the term Time and Space Complexity. 5
2. What do you mean by Analyzing Algorithms ? Analyze any sorting algorithm and find its complexity. 15

Unit II

3. Write Algorithm for Longest Common Subsequence and explain it with the help of example. 15
4. What are Splay tress and Red-Black trees ? Write algorithms for insertion and deletion in Red-Black trees. 15

Unit III

5. (a) Explain Topological Sort with the help of example. 7.5
- (b) Write Algorithm for Breadth First Search and explain it. 7.5
6. (a) What are NP-hard and NP-complete classes? Explain. 5
- (b) Explain the concept of Relaxation and write Dijkstra's algorithm. 10

Unit IV

7. Write Ford Fulkerson algorithm and explain it with the help of example. 15
8. Explain the following terms : 15
- (i) Maximum Bipartite Matching
 - (ii) Merging Network
 - (iii) Bitonic Sorting Network.