Roll No. ..... Total Pages : 02

BT-5/D-23 45176

ADVANCED ALGORITHMS

PE-CS-T307A

Time : Three Hours] [Maximum Marks : 75

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

Unit I

1. (a) Write algorithm for binary search tree. Write the time complexity of binary search (all cases). 8

   (b) Discuss the various methods for solving Recurrence. 7

2. (a) Explain Master Theorem with suitable example. 7

   (b) Discuss the role of various notations used in algorithm analysis with example. 8

Unit II

3. (a) Write short note on activity selection problem. 7

   (b) What is knapsack problem ? How can it be resolved ? 8

4. (a) Write and discuss algorithm for matrix chain multiplication. 7

   (b) Define Hiring Problem. Discuss its probabilistic analysis. 8

Unit III

5. (a) Write and explain all pair shortest path-Floyd Warshall Algorithm. **7**

   (b) Differentiate DFS and BFS with suitable example. **8**

6. (a) Write and discuss the significance of Dijkstra's Algorithm **7**

   (b) Differentiate Kruskal and Prim algorithms with example. **8**

Unit IV

7. Which string is accepted by the finite automata and which string is not accepted by the finite automata ? Explain with suitable example. Discuss, how can we use a finite automaton to search a string ? **15**

8. Write and explain the following : **2×7.5=5**

   (i) Knuth-Morris-Pratt Algorithm.

   (ii) Rabin-Karp Algorithm.