

Roll No.

2222

**B. E. 5th Semester (CSE)
Examination – December, 2011**

ANALYSIS & DESIGN OF ALGORITHMS

Paper : CSE-305-E

Time : Three hours] [Maximum Marks : 100

Before answering the question, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt any *five* questions. All questions carry equal marks.

1. (a) What is the recurrence relation ? Solve the following relation by recursive method : 10

$$P(n) = 2T(n/2 + 10) + n$$

- (b) What are priority queues and explain their applications with algorithm using suitable examples. 10

2. (a) Explain Strassen's matrix multiplication. Can you change the same technique to get lower time complexity algorithm. 10
- (b) Explain the algorithm of merge sort and compare time complexity with heap sort. 10
3. (a) Explain the greedy approach for algorithm design ? Devise a solution for fractional Knapsack using greedy approach ? Give its time complexity. 10
- (b) Explain the job sequencing with deadlines problem using suitable example. 10
4. Explain the concept of Optimal Binary Search trees with suitable example showing its applications. 10
5. (a) What is graph coloring ? Write the algorithm to find chromatic number of a graph. 10
- (b) Discuss N-Queens problem and analyze the time complexity of the same. 10
6. Discuss branch-and-bound strategy by solving any instance of 0/1 Knapsack problem and analyze the time complexity for the same. 20

7. (a) Explain deterministic and non-deterministic algorithm with suitable examples. 10

(b) Explain the following : 10

(i) NP-hard

(ii) NP-Complete

8. Explain the following : 20

(i) LC-search

(ii) Huffman codes

(iii) TSP is NP-complete
