Design and Analysis of Algorithms
(CS-307, Dec-07)

Section-A

1). a). What do you understand by Algorithm Evaluation?
   b). What is asymptotic time complexity?
   c). What are Stored RAM model?
   d). Describe a path in an undirected graph.
   e). Define post order traversal of a tree.
   f). What is the time complexity of Merge Sort?
   g). Give an example of Dynamic Programming Approach.
   h). What are Union Find Problems?
   i). What is Pattern Matching?
   j). What is NP Complete Problem?

Section-B

2). Explain the relationship between Turing Machine and RAM models.
3). Describe the Dynamic Programming algorithm for computing the minimum cost order of multiplying a string of n matrices M1 x M2 x M3…….x Mn.
4). What are position trees? Describe using examples.
5). What are NP, NP Hard and NP complete problems? Explain by giving an example of each.
6). Explain the algorithm of a non-deterministic finite automation.

Section-C

7). (a) Consider a Binary tree with names attached to the vertices. Write an algorithm to print the names in (i) Pre-order, (ii) Inorder, (iii) Post order.
   (b) How binary tree can be used for searching an element? Explain.
8). (a) What are string matching algorithms?
   (b) Given a text string x and pattern string y, determine all occurrences of y in x.
9). (a) Explain the algorithm for Fast disjoint set union algorithm.
   (b) Give an example of NP-Complete Problem.