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.