M.Tech(CSE) 3rd Semester Examination
June 2014
Algorithms Design & Techniques
Subject Code: CSL-603

Time Allowed: 03 hours.          Maximum Marks: 100

Before answering the question paper the candidate should ensure that they have been supplied the correct question paper. Complaints in this regard, if any, shall not be entertained after the examination.

Note: First question is compulsory. Attempt two questions from each section A and B.

Q1          (5x4=20)
(a) Discuss the characteristics of an algorithm. 
(b) Describe the problems associated with greedy methods. 
(c) Explain dynamic programming. How it is different from backtracking? 
(d) What is NP completeness ? Why it is important for any algorithm?

SECTION-A

Q2(a) Discuss the recursive version of Tower of Hanoi problem. Also find the time and space complexities of your algorithm.  
(b) Write short notes on asymptotic notations.
Q3(a) What is recurrence? Describe the recursion tree method and master method for it. 
(b) Discuss the merge sort algorithm and its various complexities.

Q4 (a) Solve the given fractional Knapsack problem using Greedy method and also write its algorithm. objects (n=3). 
(w1,w2,w3)=(18,15,10) 
(p1,p2,p3)=(25,24,15) 
Capacity of Knapsack= 20 
(b) Explain Huffman algorithm with suitable example. 

SECTION-B

Q5 (a) How does Matrix chain multiplication method works? Explain it. 
(b) Discuss the 0/1 Knapsack problem. 
Q6 (a) Specify the Graph coloring problem and its algorithm. 
(b) Write short notes on Branch and bound method. 
Q7 (a) Discuss the polynomial time verification of Hamiltonian cycles. 
(b) Give the solution to vertex cover problem.