MERCY CHANCE EXAMINATION
SIXTH SEMESTER [B.TECH./M.TECH.] JULY-2013
Subject: Algorithm Analysis & Design (Batch:2006)

Paper Code: IT306

Time : 3 Hours

Maximum Marks :60

Note: Attempt any five questions including Q.no.1 which is compulsory.

Question 1 Write short not on following (Any 5*4=20)   Marks 20

  (a) Big oh notation

  (b) Suffix function

  (c) Median order statistics

  (d) OBST

  (e) Topological Sort

  (f) Hamiltonian Cycle

  (g) Circuit Satisfiability

Question 2   Marks 10

  (a) Differentiate between Dynamic Programming, Divide and Conquer, and Greedy programming paradigm.

  (b) Sometimes Greedy Paradigm gives guaranteed optimal solution and sometimes does not? Illustrate the reason behind it with example.

Question 3 Solve following recurrence relations   Marks 10

  (a) $T(n) = 2 T[(n/2) + 17] + n$ using substitution method

  (b) $T(n) = 4 T(n/2) + n$ by recursive tree method

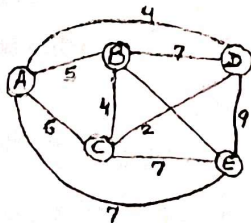 (c) $T(n) = \sqrt{2} T(n/2) + \log (n)$ using Master Theorem

Question 4   Marks 10

  (a) Determine the LCS of <1,0,0,0,1,0,1> and <1,1,1>

  (b) Write an algorithm for quick sort and show its performance in worst case, average case and best case.

Question 5   Marks 10

  (a) Find the MST for following graph using Prims method and Khrushkal Method while considering node 'A' as starting node.

  (b) Do you get the unique MST through both methods? Justify your answer with scenarios.

Question 6   Marks 10

  (a) Construct the string matching automation for the patter "aabab" and illustrate its operation on the text T = "aaababaabaabab"

  (b) Compare complexities of following string matching algorithms

    a. Naïve

    b. Robin Karp

    c. Automata based

    d. KMP

Question 7.   Marks 10

  (a) Differentiate between P, NP, NP-hard and NP- Complete problems along with proper definitions of each of them.

  (b) Define the term "Reducibility".

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