(Please write your Exam Roll No.)

END TERM EXAMINATION

SIXTH SEMESTER [B.TECH/M.TECH] MAY-JUNE 2013

Paper Code: IT-306 **Subject: Algorithm Analysis and Design**

Time : 3 Hours **Maximum Marks:75**

Note: Attempt any five questions in all. Question No 1 is compulsory.

Q1. Differentiation between (5*4=20)

a. BFS and DFS
b. NP complete and NP Hard problems
c. Greedy approach and dynamic problem
d. Big O and small o notation

Q2. Define Floyd- Warshall algorithm. How can the output of the Floyd-Warshall algorithm be used to detect the presence of a negative weight cycle? (10)

Q3.

a. Is Kruskal's algorithm greedy? Why? (5)
b. Discuss Dijkstra's shortest path algorithm with an example. (5)

Q4.

a. Write the steps of Strassen's method for matrix multiplication. (5)
b. How can LCS problem be solved using dynamic programming? (5)

Q5.

a. Differentiate between the counting sort and radix sort. (5)
b. List and explain the various disjoint set operations. (5)

Q6.

a. Compare the order of growth of $\log_2(n)$ and $\sqrt{n}$. what is your conclusion? (5)
b. Prove that if $f(n)= a_m n_m+a_{m-1}n_{m-1}+.....+a_0$ then $f(n)=O(n^m)$ (5)

Q7.

a. Explain the Rabin Karp Algorithm with an example. (5)
b. Write the steps/procedure for matching the string using Finite Automata. (5)

Q8. Write short notes on any two. (5*2=10)

a. Matroids
b. Examples of NP-hard problems
c. Growth of functions

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