(Please write your Exam Roll No.) 02-16 Exam Roll No. .....

END TERM EXAMINATION

SIXTH SEMESTER [B.TECH/M.TECH] MAY-JUNE 2016

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

Time: 3 Hours **Maximum Marks: 60**

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

Q1 Briefly explain the following:- **(2x10=20)**

(a) Define Space and Time complexity.
(b) Define a strongly connected digraph and give the minimum in degree of all the nodes in the graph.
(c) Draw a graph with a cycle but no Hamiltonian cycle.
(d) What is meant by level of a tree?
(e) What is meant by feasible solution?
(f) Give example of NP complete problems.
(g) What is the difference between Greedy method and Dynamic programming?
(h) What are the drawbacks of dynamic programming?
(i) What is meant by articulation point?
(j) Define optimal binary search tree.

Q2 (a) Elaborate on Asymptotic Notations with examples. **(5)**
(b) Explain Merge sort problem using divided and conquer technique. **(5)**

Q3 Using backtracking, find the optimal solution to a knapsack problem for the knapsack instance **(10)**
$n = 8, m = 110, (p1, p2, p3, ..., p7) = (11, 21, 31, 33, 43, 53, 55, 65)$ and $(w1, w2, ..., w7)$
$= (1, 11, 21, 33, 43, 53, 55, 65)$

Q4 Write the algorithm for N Queens Problem and trace it for n=6. **(10)**

Q5 (a) Explain graph coloring with example. **(5)**
(b) Explain any one method of finding the shortest path. **(5)**

Q6 Write short notes on **any two** of the following:- **(2x5=10)**
(a) Radix Sort
(b) Dijkstra's Algorithm
(c) NP hard problems

Q7 (a) Explain Naïve's Sting Matching Algorithm with example. **(5)**
(b) Briefly explain NP Complete ness. **(5)**

Q8 Explain Breadth First Search and Depth First Search with examples. **(10)**

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