Code No: 54016 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD
B.Tech II Year II Semester Examinations, May - 2015
DESIGN AND ANALYSIS OF ALGORITHMS
(Common to CSE, IT)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks

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1. Write short notes on following:
   a) Space complexity
   b) Time complexity
   c) Probabilistic analysis
   d) Amortized analysis. [3+4+4+4]

2. Write algorithm for Simple Union, Weighted Union, and Collapsing Find. [15]

3.a) Explain and write algorithm for divide and conquer strategy.
   b) Explain the Strassen's matrix multiplication approach and derive its time Complexity. [7+8]

4.a) Explain and write the algorithm for job sequencing with deadlines problem.
   b) Explain single source shortest path problem. [7+8]

5.a) Solve the following 0/1 Knapsack problem using dynamic programming method. P=(11,21,31,33), W=(2, 11, 22, 15), C=40, n=4.
   b) Explain and write the algorithm for travelling sales person problem. [8+7]

6. Explain how sum of subsets problem can be solved by using backtracking Method with an example. Also draw the state space tree for the considered example. Using variable size tuple and fixed size tuple representation. [15]

7.a) Generate LC branch and bound on the travelling sales man problem and find the solution space tree.
   b) Explain the branch and bound general method. [8+7]

8. Explain deterministic, nondeterministic, polynomial, non polynomial, NP-Hard NP-Complete classes algorithms. [15]

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