23/5/13

R09

Code No: R09220505

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD

B.Tech II Year II Semester Examinations, May-2013

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. Define time complexity, Describe different asymptotic notations used to represent the time complexities with suitable examples. [15]

2. Develop algorithms for UNION and FIND using weighing rule and collapsing rule respectively. [15]

3.a) Write and explain the control abstraction for Divide and conquer and give the time complexity.

b) Discuss Strassen's matrix multiplication and derive the time complexity. [15]

4.a) What is the solution generated by the function Job sequencing when N=7, (P1, P2, … …P7) = (3, 5, 20, 18, 1, 6, 30) and (d1, d2, … d7) = (1, 3, 4, 3, 2, 1, 2)

b) What is Greedy method and discuss its applications. [15]

5.a) Solve the following 0/1 Knapsack problem using dynamic programming P= (11, 21, 31, 33), W= (2, 11, 22, 15), C=40, n=4.

b) Consider three stages of a system with r1=0.3, r2=0.5, r3=0.2 and c1=30, c2=20, c3=30 Where the total cost of the system is C=80 and u1=2, u2=3, u3=2 find the reliability design. [15]

6.a) Explain the Back Tracking Strategy with an example.

b) State and explain the n-Queen problem using backtracking. [15]

7.a) Generate FIFO branch and bound on the traveling salesman problem and find the solution space tree.

b) What is bounding? Explain the principles of bounding. [15]

8. State and explain cook's theorem and also discuss about NP complete classes. [15]

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