R07

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, March - 2017
DESIGN AND ANALYSIS OF ALGORITHMS
(Computer Science and Engineering)

Time: 3 hours   Max. Marks: 80

Answer any five questions
All questions carry equal marks

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1.a) Write and explain the characteristics of a good algorithm.
 b) Distinguish between priori and posteriori analysis.   [8+8]

2.a) Explain the waiting rule for finding the union of sets and collapsing rule. Give examples for each one.
 b) What is articulation point? How will you find it? Explain with example.   [8+8]

3.a) Write and explain the general method for divide and conquer method.
 b) Give brief description about stressen's matrix multiplication.
 c) Locate the element 8 from the set {2, 5, 7, 11, 13, 17} by using binary search.   [5+5+6]

4.a) Let us consider the following job sequencing problem with deadlines.
 $n = 4$, $(P_1, P_2, P_3, P_4,) = (100, 10, 15, 27)$ and $(d_1, d_2, d_3, d_4) = (2, 1, 2, 1)$. Find the feasible and optimal solution.
 b) Differentiate between Greedy method and Dynamic programming.   [8+8]

5.a) Explain all pairs shortest path problem with suitable example.
 b) Describe the travelling salesman problem and present a solution to it by using dynamic programming.   [8+8]

6.a) Write an algorithm for m – coloring problem. Give example.
 b) List the applications of backtracking.
 c) State and explain the principle of backtracking.   [5+5+6]

7.a) Explain the principle of LIFO branch and bound.
 b) Explain the method of reduction to travelling salesperson problem using branch and bound.   [8+8]

8.a) State and prove cook's theorem.
 b) Explain how P and NP problems are related?   [8+8]

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