Reg. No. : | | | | | | | | | | |

Question Paper Code: 41224

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

Fourth Semester

Computer Science and Engineering

01UCS404 - DESIGN AND ANALYSIS OF ALGORITHMS

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. What is algorithm design technique?
2. Differentiate time complexity from space complexity.
3. Name four applications of Brute-force approach.
4. What is knapsack problem?
5. State the principle of optimality.
6. State the all-pair shortest-paths problem.
7. What is an objective row?
8. List the steps for simplex methods.
9. Define tractable and intractable problems.
10. When a node in a state space tree is said to be promising?

PART - B (5 x 16 = 80 Marks)

11. (a) Briefly discuss the steps in designing and analyzing an algorithm. (16)

Or

(b) Illustrate necessary steps for analyzing the efficiency of a recursive algorithm. Explain the same with necessary example. (16)

12. (a) Write an algorithm to perform quick sort on any given set of numbers. Analyze the same for its best case, worst case and average case analysis. (16)

Or

(b) (i) What are the steps required to solve the travelling sales man problem. (6)

(ii) Write the algorithm for Iterative binary search. (10)

13. (a) What is optimal binary search tree? Write the algorithm to find the optimal binary search tree by dynamic programming. (16)

Or

(b) Write an algorithm which is used to calculate binomial coefficient and explain the same with a suitable example. (16)

14. (a) Summarize the steps to be performed in a simplex method with an example. (16)

Or

(b) What is maximum matching? Illustrate the steps involved in finding the maximum matching in Bipartite Graphs. (16)

15. (a) Explain the various methods to identify the lower bound arguments. (16)

Or

(b) Explain NP hard and NP complete problems with example. (16)

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