

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – COMPUTER SCIENCE

FIRST SEMESTER – APRIL 2010

CS 1810 - DESIGN & ANALYSIS OF ALGORITHM

Date & Time: 24/04/2010 / 1:00 - 4:00

Dept. No.

Max. : 100 Marks

PART - A: ANSWER ALL THE QUESTIONS

10 x 2 = 20

1. Why do we need to study algorithms?
2. Write the Euclid's algorithm to evaluate GCD.
3. Sketch out the general plan of Divide-and-Conquer technique.
4. What are the different forms of Binary Tree traversal?
5. How does Dynamic Programming method differ from Divide-and-Conquer strategy?
6. Write a short note on Memory functions.
7. What is Backtracking?
8. What is Hamiltonian circuit? Give an example.
9. What do you mean by class NP-Problems?
10. What do you mean by Heuristics?

PART - B: ANSWER ALL THE QUESTIONS

5 x 8 = 40

11. a) Explain the different areas of algorithms development.
(OR)
b) Explain the necessary steps for analyzing the efficiency of nonrecursive algorithms.
12. a) Discuss the concept of Depth First Search algorithm with a suitable example.
(OR)
b) Explain the method of finding the minimum Cost Spanning tree for a connected graph using Kruskal's algorithm.

13. a) How will you find Transitive Closure of a graph using Warshall's algorithm.
Explain.

(OR)

b) Discuss the algorithm for computing Binomial Coefficient with an example.

14. a) Solve the 4 queen's problem using backtracking technique and represent the state space tree.

(OR)

b) Explain with an example how to solve Knapsack problem using Branch-and-Bound technique.

15. a) Explain the Approximation algorithm for NP hard problems.

(OR)

b) Explain twice-around-the tree algorithm for solving Travelling Salesperson Problem.

PART - C: ANSWER ANY TWO QUESTIONS

2 x 20 = 40

16. a) Explain the steps in Designing and analyzing algorithms. (10)

b) Analyze the performance of Quick sort algorithm with an example. (10)

17. a) Discuss the algorithm to find All Pairs Shortest path. (10)

b) Explain the algorithm to construct Optimal Binary Search tree. (10)

18. a) Describe the Assignment Problem and discuss how to solve it using Branch-and-Bound technique. (10)

b) Discuss how to find the solution for Knapsack Problem using approximation algorithm. (10)
