LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – COMPUTER SCIENCE

SECOND SEMESTER – **APRIL 2014**

CS 2818/2824 - DESIGN & ANALYSIS OF ALGORITHMS

Date : 01/04/2014   Dept. No.   Max. : 100 Marks
Time : 09:00-12:00

Section – A (10 X 2 = 20 Marks)

Answer all Questions

1. Define an Approximate and exact algorithm.
2. When we can say a sorting algorithm is stable?
3. Define Pivot element.
4. What do you mean by weight of a tree?
5. Define Brute Force Approach
6. What do you mean by back edge and cross edge?
7. What do you mean by optimal solution?
8. Define state space tree.
9. When we can say an algorithm solves the problem in Polynomial time?
10. Define Bin Packing.

Section – B (5 X 8 = 40 Marks)

Answer all Questions

11 a).Explain the steps involved in Algorithm design and analysis process.
                    Or
   b).Write about the notations used for analysis of algorithm efficiency.

12 a). Explain Binary Search with an example.
                    Or
   b). Describe about Prim's algorithm

13 a). Design an algorithm for solving Knapsack Problem using greedy
        technique.
                    Or
   b). Explain about Breadth First Search algorithm

14 a). Explain how to solve 4-Queen problem using backtracking?
                    Or
   b). Explain in detail about Traveling salesman problem.

15 a). Write about P , NP and NP complete problems.
                    Or
   b). Write about the twice around the tree algorithm.

Section – C (2 X 20 = 40 Marks)

Answer any TWO Questions

16 a). Explain in detail about mathematical analysis of Fibonacci Series.

   b). Write the algorithm and explain the following with an example.
       i) Merge sort
       ii) Quick sort

17 a). Apply the Floyd's algorithm to the following graph and explain it
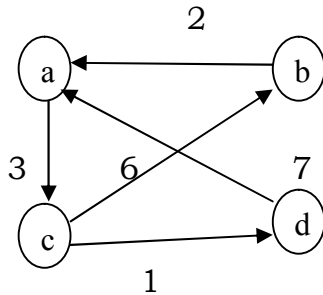
   b) How to Apply the branch and bound technique to solve the Assignment
       problem? Write the algorithm and explain it.

18 a). Explain with an example the approximation algorithm to solve Knapsack
        Problem.

   b). Write an algorithm and apply it to construct the optimal Binary search tree
       for the following data

Key	A	B	C	D
Probability	0.1	0.2	0.4	0.3

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