



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – COMPUTER SCIENCE

FIRST SEMESTER – APRIL 2014

CS 1810 - DESIGN & ANALYSIS OF ALGORITHM

Date : 29/03/2014
Time : 09:00-12:00

Dept. No.

Max. : 100 Marks

Section – A

Answer all Questions

(10 X 2 = 20 Marks)

1. What do you mean by an Algorithm design Technique?
2. What is the role of key in search algorithms?
3. List out the advantages of using Divide and Conquer Technique.
4. List out the conditions satisfied by a choice in greedy Technique
5. What is dynamic programming?.
6. Define Optimal Binary Search Tree.
7. Write the basic idea of Branch and bound technique.
8. Differentiate between promising and non promising node.
9. When we can say an algorithm solves the problem in Polynomial time?
10. Define Graph coloring.

Section – B

Answer all Questions

(5 X 8 = 40 Marks)

- 11 a). Write about the Algorithm design and analysis process.
Or
b). Write about the notations used in estimating efficiency of an algorithm.
- 12 a). Explain merge sort with an example.
Or
b). Describe about Prim's Algorithm.
- 13 a). Explain the Warshall's Algorithm with an example.
Or
b). Explain the advantages of using memory functions with an example.
- 14 a). Explain how to solve 3-Queen problem using backtracking?.
Or
b). Apply backtracking to solve the following instance of a subset sum problem $s = \{1,3,4,5\}$ with $d=11$.
- 15 a). Write about P, NP and NP complete problems.
Or
b). Write the approximation algorithm to solve the knapsack problem.

Section – C

Answer any TWO Questions

(2 X 20 = 40 Marks)

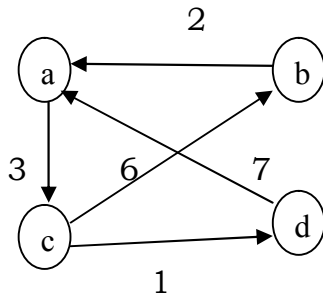
16 a). Explain in detail about mathematical analysis of Fibonacci series.

b). Write the algorithm and explain the following with an example.

i) Binary search

ii) Strassen's Matrix multiplication

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 Knapsack Problem? Write the algorithm and explain it.

18 a). 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

b). Explain in detail about the approximation algorithms for the traveling salesman problem.
