LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION - **COMPUTER SC.**

FIRST SEMESTER – **APRIL 2013**

CS 1810 - DESIGN & ANALYSIS OF ALGORITHM

Date : 27/04/2013 Dept. No. Max. : 100 Marks

Time : 9:00 - 12:00

Section – A

Answer all Questions: **(10 X 2 = 20 Marks)**

1. Define sequential algorithm.
2. Define Graph.
3. Define binary tree.
4. Write the general plan followed by the Divide and Conquer algorithms.
5. Define dynamic programming.
6. What do you mean by straight and Binary insertion sort?
7. What do you mean by branch and bound technique?
8. Define Promising node.
9. When we can say an algorithm solves the problem in Polynomial time?
10. Define Graph coloring and m-coloring problem.

Section – B

Answer all Questions: **(5 X 8 = 40 Marks)**

11 a). Write and describe the procedure to identify GCD using Euclid method With an example.

Or

b). Draw the flowchart and describe about Algorithm design and analysis process.

12 a). Explain how Quick sort can be performed with example.

Or

b). Explain about Prim's Algorithm with suitable example

13 a). Design an algorithm for computing binomial coefficient and explain it.

Or

b). Write about memory functions.

14 a). Apply backtracking to solve the following instance of a subset sum problem s = {1,3,4,5}with d=11.

Or

b). Explain in detail about Hamiltonian circuit problem.

15 a). Write about P and 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)**

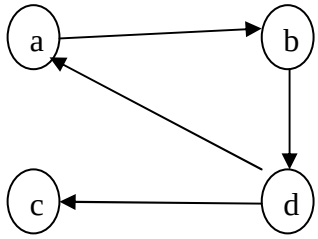
16 a). a). What is non recursive algorithms? Explain in detail about mathematical analysis of non recursive Algorithms with example.

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

i) Binary search

ii) Strassen's Martix multiplication

17 a). a). Apply the warshall's algorithm to the following graph and explain your algorithm



b). Solve the knapsack problem using branch and bound technique.

18 a). Explain with an example the Twice-around- the-tree algorithm.

b). Explain in detail about Dijkstra's algorithm to find the shortest path with an example.

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