LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – **COMPUTER SCIENCE**

SECOND SEMESTER – **APRIL 2015**

CS 2824 - DESIGN & ANALYSIS OF ALGORITHMS

Date : 18/04/2015   Dept. No.   Max. : 100 Marks
Time : 01:00-04:00

Section – A

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

1. Define graph coloring problem.
2. Define pseudo code.
3. What is Partition in Quick sort?
4. Define Binary tree.
5. Define Decrease and Conquer Technique.
6. What is Transitive closure.
7. What is feasible solution?
8. Define state space tree.
9. What is tractable problem?
10. Define NP hard problems.

Section – B

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

11. a) Write about the Mathematical analysis of non-recursive algorithms.

Or

  b) Write about the Asymptoticnotations.

12. a) Write and explain the Quick sort algorithm to sort the following numbers

    5   3   1   9   8   2   4   7

Or

  b) With algorithm explain how binary search is used to search 8in the given

  list 10   12   5   9   4   11   8   3   13   2?

13. a) Design an algorithm for sorting the following list of numbers using

    insertion sort and explain it.89 45 68 90 29 34 17.

Or

  b) Construct the optimal binary search tree for the following data and explain
     thealgorithm.

KEY :	A	B	C	D
PROBABILITY :	0.1	0.2	0.4	0.3

14. a)Draw and explain the state space tree for solving four queens problem.

Or

  b) Discuss in detail about Hamiltonian circuit problem.

15. a) Explain about P , NP and NP Complete problems.

Or

  b) Write and explain the approximation algorithm to solve the knapsack
     problem.

Section – C

Answer any TWO Questions: **(2 X 20 = 40 Marks)**

16. a) Explain in detail the algorithm design and analysis process with a neat sketch .

    b) Explain in detail the kruskal's algorithm with an example.

17. a) Explain in detail the following with an example
    I.   Breadth First Search
    II. Depth First Search

    b). Solve the following assignment problem using Branch and Bound

    Technique and draw the state space tree.

	J1	J2	J3	J4
P1	9	2	7	8
P2	6	4	3	7
P3	5	8	1	8
P4	7	6	9	4

18. a) Solve the traveling salesman problem using approximation algorithm.

    b) Explain with an example the Prim's algorithm.

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