

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



M.Sc. DEGREE EXAMINATION – COMPUTER SCIENCE

SECOND SEMESTER – APRIL 2018

17/16PCS2MC01– DESIGN AND ANALYSIS OF ALGORITHMS

Date: 17-04-2018

Dept. No.

Max. : 100 Marks

Time: 01:00-04:00

Section – A (10 X 2 == 20 Marks)

Answer all Questions

1. Define an algorithm.
2. What do you mean by recursive algorithms?
3. Write the steps to be followed to merge two sorted arrays using merge sort.
4. Define Partition.
5. Define optimal binary search tree.
6. What is Dynamic programming?
7. What is Hamiltonian circuit?
8. What do you mean by a State space tree?
9. Define NP Problem.
10. What is Polynomial problem?

Section – B (5 X 8 == 40 Marks)

Answer all Questions

- 11 a). Discuss about Asymptotic Notations.
Or
b). Explain the algorithm design and analysis process.
- 12 a). Write the procedure for binary tree traversal.
Or
b). Explain the Quick sort with example.
- 13 a). Differentiate between depth first search and breadth search tree.
Or
b). Explain the Insertion sort with an example.
- 14 a). Write a procedure to solve 4-queen problem using backtracking.
Or
b). What is an assignment problem? Write a procedure to solve assignment problem using back tracking.
- 15 a). Write about P, NP and NP complete problems.
Or
b). Write the procedure to solve knapsack problem using approximation algorithm.

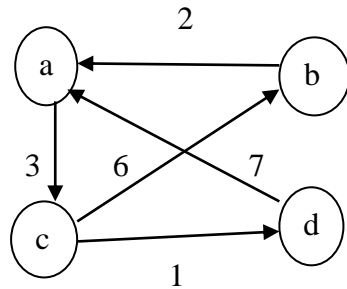
Section – C (2 X 20 == 40 Marks)

Answer any TWO Questions

16 a). Explain in detail the principal steps in analyzing recursive algorithm with example.

b). Explain the single source shortest path problem with an example.

17 a). Apply the Floyd's algorithm to the following graph and explain it



b). Discuss in detail about Hamiltonian circuit problem.

18. a) Explain the approximation algorithm to solve a knapsack problem.

b). How memory functions are used in dynamic programming to solve a problem?
