

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



M.Sc. DEGREE EXAMINATION – COMPUTER SCIENCE

SECOND SEMESTER – APRIL 2019

17/18PCS2MC01– DESIGN AND ANALYSIS OF ALGORITHMS

Date: 03-04-2019

Dept. No.

Max. : 100 Marks

Time: 01:00-04:00

Part – A

Answer ALL the questions

10 x 2 = 20 marks

1. Identify any four desirable characteristics of an algorithm.
2. State the formulae to find out N^{th} Fibonacci number.
3. List the general plan of Divide and conquer algorithm.
4. How does the pre-order traversal differ from the post-order traversal?
5. Notify the significance of dynamic programming.
6. What is the principal difference between Depth-First Search and Breadth-First Search?
7. Differentiate between Feasible solution and optimal solution.
8. State the aim of Knapsack problem.
9. What is computational complexity?
10. Why the performance ratio is so important?

Part – B

Answer ALL the questions

5x 8 = 40 marks

11. a) Briefly describe about fundamental data structures

(Or)

b) Briefly discuss about the Analysis Framework.

12. a) With an example, illustrate multiplication of large numbers using Divide and conquer technique

(Or)

b) Explain how greedy technique is utilized in Prim's algorithm.

13. a) illustrate Depth First Search algorithm using Decrease and conquer technique with an example

(Or)

b) Discuss about Optimal Binary Search tree and its advantages.

14. a) Propose an algorithm to solve N-Queens problem.

(Or)

b) Discuss in detail about assignment problems and determine an optimal solution for the same.

15. a) Briefly explain about P & NP problems and their characteristics

(Or)

b) Solve Travelling salesman problem using NP Hard problem technique and explain .

Part – C

Answer ANY TWO questions

2 x 20 = 40 marks

16. a) Write about fundamentals of algorithmic problem solving.
- b) Explain Binary search algorithm with suitable example.
17. a) Illustrate the use of dynamic programming in solving computation of binomial coefficient.
- b) Discuss how branch and bound technique is utilized in travelling salesman problem.
18. a) Solve Knapsack problem using approximation algorithm and explain.
- b) Explain Brute Force technique and Divide and conquer technique for sorting N numbers and compare their efficiency.
