



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – COMPUTER SCIENCE

SECOND SEMESTER – APRIL 2023

PCS 2501 – DESIGN AND ANALYSIS OF ALGORITHMS

Date: 09-05-2023

Dept. No.

Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

PART – A

(10 x 2 = 20 Marks)

Q. No	Answer ALL the Questions
1	What is Time efficiency?
2	What are the fundamental steps involved in algorithmic problem solving?
3	What is the basic principle of Divide and Conquer method?
4	What is called Spanning Tree?
5	Differentiate pre-order traversal and post-order traversal.
6	Define the term : Dynamic Programming
7	What is State Space tree?
8	What is Subset Sum Problem?
9	What is P Class problem?
10	What is NP Complete Problem?

PART – B

(5 x 8 = 40 Marks)

Answer ALL the Questions

11	(a) Discuss in detail about asymptotic notations used in algorithm analysis. (Or) (b) Explain any four important Data structures in detail.
12	(a) Describe merge sort in detail? And provide the complete analysis with example. (Or) (b) Explain Dijkstra's algorithm with an example.
13	(a) Explain the procedure involved in bubble sort algorithm with an example. (Or) (b) Explain Breadth-First Search algorithm with suitable example.
14	(a) Explain the Backtracking technique with N Queen Problem. (Or) (b) Explain the procedure involved in Hamiltonian circuit problem with an example.
15	(a) Write short notes on Nearest-neighbor algorithm. (Or) (b) Describe in detail about complexity Classes in the field of theoretical computer science.

PART – C**(2 x 20 = 40 Marks)****Answer any TWO Questions**

16	(a)	Illustrate mathematical analysis (Time Efficiency) of Non-recursive Algorithms.	(10)
	(b)	Explain Kruskal's algorithm with suitable example.	(10)
17	(a)	Enlighten the Floyd Warshall's algorithm with Example.	(10)
	(b)	Explain the procedure involved in Branch and bound technique with an example.	(10)
18	(a)	Explain approximation algorithm for the Knapsack problem with example.	(10)
	(b)	Describe Binary search algorithm using divide and conquer method with an example.	(10)

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