Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

M.E DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025

First Semester

Computer Science and Engineering

PCST2401 - Advanced Data Structures and Algorithms

Regulations - 2024

Duration : 3 Hrs *Maximum : 100 Marks*

*PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)*

Q.No	*Questions*	*BLT*	*CO*	*Marks*
1.	Define Recursion.	L1	1	2
2.	List out Two major phases of Performance Evaluation.	L1	1	2
3.	State the insertion operation in B Tree.	L1	2	2
4.	Illustrate on insertion and deletion of Red Black Tree.	L2	2	2
5.	Evaluate the path finding problems.	L5	3	2
6.	Analyze the shortest path algorithm with an example.	L4	3	2
7.	Define backtracking.	L1	4	2
8.	Design triangulation problem.	L3	4	2
9.	Define n-queens problem.	L1	5	2
10.	When can we say a problem is decidable? Give an example of undecidable problem?	L1	5	2

*PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)*

Q.No			*Questions*	*BLT*	*CO*	*Marks*
11.	a		Discuss in detail about fundamentals of algorithmic problem solving?	L2	1	16
			Or			
	b		Discuss the method of solving recurrence equations with suitable example.	L2	1	16
12.	a	i	Explain B Tree and Give an example for insertion in B Tree.	L2	2	8
		ii	Evaluate the features of B Tree.	L5	2	8
			Or			
	b		Evaluate the features of Red Black Tree with an example.	L5	2	16
13.	a	i	Give the briefing of biconnectivity.	L2	3	8
		ii	Identify the algorithm for depth first search.	L2	3	8
			Or			
	b		Express the steps for depth first search with an example.	L2	3	16

14.	a	i	List the steps for Balancing of sub problems.	L2	4	6
		ii	Describe the divide and conquer algorithm.	L2	4	10
			Or			
	b	i	What is Greedy Technique?	L2	4	6
		ii	Design and implement an algorithm for Greedy method.	L2	4	10
15.	a		Describe in detail about P and NP problems.	L4	5	16
			Or			
	b	i	Examine UTMs or Universal Turing machines.	L4	5	8
		ii	Analyze and write the short notes on NP-complete problems.	L4	5	8