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Supplementary/ Improvement Examination-2024

(For Even Semester Examination-2024)

Programme Name: MCA

Paper Name: Data Structures and Algorithms

Paper Code: MCA 202

Time: 2 Hours 30 minutes

Maximum Marks: 60

Follow proper numbering for answering the questions

SECTION A

4 X 5 = 20 Marks

All questions are compulsory in this Section.

Q.N	Questions	Marks	CO	BL
1.	Explain the storage structures for arrays in row-major and column-major order with an example.	5	CO-1	L1
2.	Describe the operations of a doubly linked list and its advantages over a singly linked list.	5	CO-2	L2
3.	Write the steps to convert an infix expression to postfix using a stack. Provide an example.	5	CO-3	L3
4.	Compare AVL trees and binary search trees in terms of height balancing and operations.	5	CO-5	L3

SECTION-B

4 X 10 = 40

Marks

Attempt any FOUR questions from this Section.

Q.N	Questions	Marks	CO	BL
1.	Implement a program to perform insertion and deletion operations in a circular linked list.	10	CO-4	L4
2.	Analyze the time complexity of merge sort and explain its working with an example.	10	CO-3	L4
3.	Illustrate the process of Breadth-First Search on a graph with an example.	10	CO-2	L3
4.	Construct a binary tree from the given inorder and preorder traversals and explain the process. Inorder = [3, 1, 4, 0, 5, 2] Preorder = [0, 1, 3, 4, 2, 5]	10	CO-5	L5
5.	Discuss the differences between Kruskal's and Prim's algorithms for finding Minimum Spanning Tree.	10	CO-5	L2
6.	Explain the concept of hash tables and how collision is resolved using open addressing.	10	CO-4	L3