

Enrolment No:

Roll No:

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Examination: EVEN SEMESTER-2023

MCA 1st Year (2nd Semester)

Paper Name : Data Structures and Algorithms
Time: 2.5 hours

Paper Code: MCA 202
Maximum marks: 60

Note: This question paper contains two sections Section A and B.

Follow proper numbering for answering the questions.

BL - Bloom's Taxonomy Levels (1: Remembering, 2: Understanding, 3: Applying, 4: Analysing, 5: Evaluating, 6: Creating)

CO - Course Outcomes

Section-A

All questions are compulsory in this section.

Marking Scheme : 4 X 5 = 20.

Q.N.	Questions	Mark	CO	BL
Q1	Write and explain an algorithm to convert infix to postfix expression. Give example to support your answer?	5	CO3	L3
Q2	Write short note on the following: a) Sparse matrix and its representation b) Binary Search	5	CO3, CO4	L3, L6
Q3	Explain the push () and pop () operation using linked list in a stack?	5	CO2, CO3	L4
Q4	Write and explain the algorithm of insertion of an item at a specific position in a doubly linked list?	5	CO3	L4

Section-B

Attempt any FOUR questions in this section.

Marking Scheme : 4X 10 = 40.

Q.N.	Questions	Mark	CO	BL
Q1	What is sorting? Explain and two types of sorting with example.	10	CO4	L6
Q2	Explain the properties of a Binary Tree? Discuss the Tree Traversal mechanisms?	10	CO5	L5
Q3	Describe and distinguish between Breadth First Search, Depth First Search algorithm?	10	CO5	L5
Q4	Write the enqueue and dequeue operation in Circular Queue and Priority queue? Explain their applications.	10	CO3	L6
Q5	What are spanning trees? write an Algorithm for Kruskal's and Prim's for Finding Minimum cost Spanning Trees.	10	CO5	L5
Q6	Differentiate between linear search and binary search? What is the time complexity of these algorithms in best case?	10	CO4	L6