Roll No. ------------------

**MCA-06**

**Data Structure through C Language**

2nd Semester Examination 2024 (Dec.)

**TIME: 2 Hours Max Marks: 70**

Note: This paper is of Seventy (70) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein. ***Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.***

**SECTION – A**

**Long-answer - type questions**

**Note: Section ‘A’ contains Five (05) long-answer-type questions of Nineteen (19) marks each. Learners are required to answer any two (02) questions only. (2×19=38)**

1. What is data structure? Explain linear and nonlinear data structure.
2. What is Stack? What are the basic operations performed on stack? Explain.
3. What is Binary Tree? Explain Sequential and Link Representation of Binary Tree with an example.
4. What is Dynamic Memory Allocation? What are Dynamic Allocation Functions? Explain with an example.
5. Explain in detail about Queue, Circular Queue and Priority Queue with an example.

**SECTION – B**

**Short – answer – type questions**

**Note: Section ‘B’ contains eight (08) short- answer type questions of Eight (08) marks each. *Learners are required to answer any Four (04) questions only.* (4×8=32)**

1. What is data and information? Explain with an example.
2. Differentiate between Array and Stack?
3. What is Abstract Data Type? Explain with an example.
4. Explain the difference between Depth First Search and Breadth First Search.
5. What is Linked List? Explain different types of Linked List with an example.
6. What are the applications of Stack? Write a C program to implement any one of them.
7. What is Searching? Explain the types of Searching.
8. Explain the following terms:
9. Time Complexity and Space Complexity
10. Advantages and Disadvantages of Linear search and Binary search.