

# C1008

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Roll No. ....

## MIT (CS)-401

### Data Structure

M.Sc. Cyber Security (MSCCS)

4th Semester Examination, 2022 (June)

**Time : 2 Hours]**

**Max. Marks : 80**

**Note :** This paper is of Eighty (80) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein.

### SECTION–A

#### (Long Answer Type Questions)

**Note :** Section 'A' contains Five (05) long answer type questions of Twenty (20) marks each. Learners are required to answer any Two (02) questions only.

(2×20=40)

1. What is Data Structure? Briefly explain the types of Data Structure with suitable example.

2. What is Dynamic Memory Allocation? What are the dynamic memory allocation functions? Explain with an example.
3. What is circular queue? What are its advantages? Write the algorithms for the insertion and deletion operations performed on the circular queue.
4. What is Algorithmic Complexity? Briefly Explain Space Complexity and Time Complexity with suitable examples.
5. What is pointer? How it is used to access elements of an array? Explain the concept by suitable example.

### **SECTION-B**

#### **(Short Answer Type Questions)**

**Note :** Section 'B' contains Eight (08) short answer type questions of Ten (10) marks each. Learners are required to answer any Four (04) questions only. (4×10=40)

1. What do you mean by abstract data type? Explain.
2. What is Data and Information? Explain with an example.
3. What is a stack? What are the different operations can be performed on stack? Explain with examples.

4. What is linked list? How it is represented in memory? Briefly explain header linked list.
  5. Define binary search tree. Write an algorithm to search an element in Binary search tree.
  6. Explain Insertion sort in details. Write an algorithm for it. Discuss the complexity of insertion sort.
  7. Explain the following terms :
    - (a) Linear Search.
    - (b) Minimum spanning tree.
  8. What is binary tree? Explain different traversal methods of binary tree.
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