

Dr. Babasaheb Ambedkar Open University, Ahmedabad

Term-End Examination : January-2026

Course Name : BSCIT

Subject Name : Data Structures

Subject Code : BSCITRMA-202

Date : 23-02-2026

Time : 11:30AM TO 01:45PM

Max Marks : 70

Section A

Q.-1. Respond to any three of the following questions in brief. (30)

- (1) Explain the differences between Linear and Non-Linear data structures with examples.
- (2) List and explain representation of method of a graph.
- (3) What are the types of sorting algorithms? Explain it with examples.
- (4) Compare Array and Linked List in terms of memory allocation, access time, and operations.
- (5) Explain hashing technique.

Section B

Q.-2. Write short notes on any four of the following topics. (20)

- (1) What are Abstract Data Types (ADTs)? How are they different from Data Structures?
- (2) Write a short note on AVL-Tree.
- (3) Write a note on internal and external sorting with help of example?
- (4) Define Stack data structure.
- (5) What are the types of Linked Lists? Explain briefly.
- (6) Write a note Linear Search.

Section C

Q.-3. Choose the correct option (A, B, C, or D). (10)

(1) Which of the following is a Primitive Data Type in C?

- | | |
|--------------|----------|
| A) Structure | B) Class |
| C) int | D) Array |

(2) The process of combining two arrays into one is called:

- | | |
|--------------|-------------|
| A) Searching | B) Sorting |
| C) Merging | D) Deletion |

(3) Which search algorithm requires a sorted array?

- | | |
|------------------|------------------|
| A) Linear Search | B) Binary Search |
| C) Both | D) None |

(4) How many for loops are needed to multiply two 3x3 matrices?

- | | |
|------|------|
| A) 2 | B) 3 |
| C) 4 | D) 1 |

(5) Which Linked List has the last node pointing to the first node?

- | | |
|-------------------------|-----------------------|
| A) Singly Linked List | B) Doubly Linked List |
| C) Circular Linked List | D) Linear Linked List |

(6) Stack follows which principle?

- | | |
|---------|---------------|
| A) FIFO | B) LIFO |
| C) FILO | D) Both B & C |

(7) Which condition is checked in the push() operation of a stack?

- | | |
|--------------|-------------|
| A) Underflow | B) Overflow |
| C) Empty | D) Full |

(8) A Double Ended Queue is called:

- | | |
|-----------------|-------------------|
| A) Simple Queue | B) Circular Queue |
| C) Deque | D) Priority Queue |

(9) Which of the following is a type of tree?

- A) AVL Tree
- B) B Tree
- C) Binary Search Tree
- D) All of the above

(10) Which data structure is used in DFS traversal?

- A) Queue
- B) Stack
- C) Array
- D) Linked List

Section D

Q.-4. Indicate whether the following statements are True or False

(10)

- (1) In C language, array index starts from 1.
- (2) In a Singly Linked List, each node stores the address of the previous node.
- (3) Stack overflow occurs when we try to push an element into a full stack.
- (4) Postfix expression is also known as Reverse Polish Notation.
- (5) Queue follows LIFO principle.
- (6) A Deque allows insertion and deletion from both ends.
- (7) A Full Binary Tree has every node with either 0 or 2 children.
- (8) Graph is a non-linear data structure.
- (9) DFS (Depth First Search) uses Queue data structure.
- (10) Dijkstra's algorithm is used to find the shortest path in a graph.
