

Dr. Babasaheb Ambedkar Open University
Term End Examination July – 2026

Course : BSCCS
Subject Code : BSCCS-202
Subject Name : Data Structures

Date : 21/07/2026
Time : 11:30am to 01:45pm
Duration : 02:15 Hours
Max. Marks : 70

Section A

Answer the following (Attempt any three) (30)

1. What is data structure? Explain types of data structure.
2. Explain different types of linked list with its structure.
3. What is tree? Define: Root Node, Edge, Leaf node, Sibling, Internal Node, Level of a node, Depth of a node, Height of a node.
4. What is graph? Explain types of graphs.
5. What is sorting? Explain any one sorting method in details.

Section B

Answer the following (Attempt any four) (20)

1. Explain operations on array.
2. Write short note on Sparse matrix.
3. Explain dynamic memory allocation functions.
4. List and explain applications of stack in brief.
5. Write short note on circular queue.
6. Explain in-order traversal in binary search tree with example.

Section C

Part – A (Multiple Choice Questions) (10)

1. Which category of data type represents only the behavior of data without specifying its implementation?
A Primitive Data Type B Derived Data Type
C Abstract Data Type D User-defined Data Type
2. Which data structure allocates memory during program execution?
A Static Array B Dynamic Linked List
C Fixed Matrix D Enumeration
3. Which linked list contains pointers to both previous and next nodes?
A Circular Linked List B Header Linked List
C Singly Linked List D Doubly Linked List
4. Which application commonly uses a stack?
A Function Call Management B Printer Scheduling
C CPU Scheduling D File Allocation
5. In queue implementation, insertion takes place at:
A Front B Middle
C Rear D Any position

- 6 AVL Tree is primarily designed to:
 - A AVL Tree is primarily designed to:
 - B Maintain height balance
 - C Increase duplicate nodes
 - D Remove leaf nodes
- 7 Binary Search can be applied only when data is:
 - A Random
 - B Sorted
 - C Duplicate
 - D Circular
- 8 Which sorting technique divides the list into smaller sublists recursively?
 - A Merge Sort
 - B Shell Sort
 - C Insertion Sort
 - D Selection Sort
- 9 Which file organization allows direct access to records through hashing?
 - A Sequential File
 - B Heap File
 - C Indexed Sequential File
 - D Hashed File
- 10 Which sorting algorithm exchanges adjacent elements repeatedly?
 - A Quick Sort
 - B Heap Sort
 - C Bubble Sort
 - D Merge Sort

Part – B (Do as Directed)

(10)

State whether the following statements are true or false

- 1 Primitive data types are created by programmers according to application requirements.
- 2 Arrays store homogeneous data elements.
- 3 Traversal means visiting every element exactly once in a data structure.
- 4 A circular linked list has its last node connected to the first node.
- 5 Overflow in a stack occurs when an element is removed from an empty stack.
- 6 Every binary tree is necessarily a Binary Search Tree.
- 7 Depth-First Search explores one branch completely before backtracking.
- 8 Quick Sort always chooses the first element as the pivot.
- 9 Sequential file organization stores records in a predefined order.
- 10 A graph may contain cycles, whereas a tree cannot contain cycles.
