

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

Course	: BCA/DCA	Date	: 12-Feb-26
Subject Code	: BCAN-201(NEW)/DCA-201	Time	: 03:00pm to 05:15pm
Subject Name	: Data Structure Using 'C'	Duration	: 02.15 Hours
		Max. Marks	: 70

Section A

Answer the following (Attempt any three) (30)

1. Define sparse arrays. Discuss various ways to represent sparse arrays effectively.
2. Describe bubble sort. Apply it on given data. 34 ,56 ,77, 3, 54,22,30,11,23,45
3. Describe insert and delete operations in singly linked list with a suitable code.
4. Discuss basic tree representation using array and linked list.
5. Discuss adjacency matrix and adjacency list representations of graphs.

Section B

Answer the following (Attempt any four) (20)

1. What is a data structure? Give the types of data structure.
2. How to pass an array to a function?
3. Explain infix, prefix, and postfix using proper example.
4. Write two operations performed on queue to insert and delete the elements.
5. Explain various types of Binary Tree Traversing Techniques.
6. Describe DFS algorithm with a suitable code and an example.

Section C

Part – A (Multiple Choice Questions) (10)

- 1 Which data structure is needed to convert infix notation to postfix notation?
A Tree B Stack
C Branch D Queue
- 2 The data structure required for Breadth First Traversal on a graph is?
A Tree B Stack
C Array D Queue
- 3 What is the value of the postfix expression 6 3 2 4 + – *?
A -18 B 22
C 74 D 40
- 4 The prefix form of $A-B/(C * D ^ E)$ is?
A $-A/BC*^{\wedge}DE$ B $-A/B*C^{\wedge}DE$
C $-ABCD*^{\wedge}DE$ D $-/*^{\wedge}ACBDE$
- 5 Minimum number of queues to implement stack is _____.
A 1 B 2
C 3 D 4

- 6 The matrix contains m rows and n columns. The matrix is called Sparse Matrix if
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- A Total number of Zero elements = $m + n$ B Total number of Zero elements = $m - n$
 C Total number of Zero elements = m/n D Total number of Zero elements $> (m*n)/2$
- 7 Which of the following method is used for sorting in merge sort?
 A Partitioning B Exchanging
 C Merging D Selection
- 8 Quick sort uses which of the following method to implement sorting?
 A Partitioning Exchanging
 C Merging Selection
- 9 Where is linear searching used?
 A Used all the time B When the list has only a few element
 C When performing a single search in an unordered list D Both B and C
- 10 How is the 2nd element in an array accessed based on pointer notation?
 A $*(a + 2)$ B $\&(a + 2)$
 C $*(*a + 2)$ D $*a + 2$

Part – B (Do as Directed)

(10)

Define the terms:

- 1 Time Complexity of an algorithm
- 2 Row major order implementation of 2-D array
- 3 Stack vs. Queue
- 4 D-Queue
- 5 Doubly linked list
- 6 Complete binary tree
- 7 Hamiltonian path
- 8 Minimum spanning tree
- 9 Sequential search
- 10 Indexed vs. Sequential Files
