

# BCA-12

## December - Examination 2025 BCA (Part II) Examination DATA STRUCTURE & ALGORITHM Paper : BCA-12

[Time: 3 Hours ]

[ Maximum Marks: 70]

**Note :-** The question paper is divided into three Sections A, B and C. Write answers as per the given instructions.

### Section-A

7×2=14

#### (Very Short Answer Type Questions)

**Note :-** Answer **all** questions. As per the nature of the question delimit your answer in one word, one sentence or maximum up to **30** words. Each question carries **2** marks.

1. (i) What do you mean by recursive function?
- (ii) What is LIFO structure?
- (iii) What is meant by degree of tree?
- (iv) What is vertex and edges in graph?
- (v) What is expression tree?
- (vi) What is circular linked list?
- (vii) What is divide and conquer method?

### Section-B

4×7=28

#### (Short Answer Type Questions)

**Note :-** Answer **any four** questions. Each answer should not exceed **200** words. Each question carries **7** marks.

2. Write algorithm for tree traversal.
3. Explain selection sort algorithm.
4. Write algorithm for PUSH and POP function in stack.
5. Write difference between BFS and DFS.
6. What is priority queue? Write its implementation.
7. Explain the Dijkstra's shortest path algorithm.
8. Define minimum spanning tree. Construct the binary tree for the in-order and post-order traversal sequence given below -  
In-order : "INFORMATION"  
Post-order : "INOFMAINOTR"
9. Explain static and dynamic memory allocation.

**Section-C**

**2×14=28**

**(Long Answer Type Questions)**

**Note :-** Answer **any two** questions. You have to delimit your each answer maximum up to **500** words. Each question carries **14** marks.

10. Explain link implementation of binary search tree.
11. Write a note on -
  - (a) Tree data structure
  - (b) Sorting in data structure
12. Write an algorithm to convert postfix expression to infix expression.
13. Write a functions to implement insert() and traverse() of singly linked list.

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