

BCA-12

June – Examination 2022

BCA (Part II) Examination

Data Structures and Algorithms

Paper : BCA-12

Time : 1½ Hours]

[Maximum Marks : 70

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

Section-A

4×3½=14

(Very Short Answer Type Questions)

Note :- Answer any *four* 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 3½ marks.

1. (i) What is Asymptotic Notations ?
- (ii) Define Linear and Non-linear Data Structures.

- (iii) What is a Stack ?
- (iv) What is a Circular Linked List ?
- (v) Define Queues Operation.
- (vi) What is a Bubble Sort and how do you perform it ?
- (vii) What is Expression Tree ?
- (viii) Define Recursion. State advantages and disadvantages.

Section-B **4×14=56**

(Short Answer Type Questions)

Note :- Answer any *four* questions. Answer should not exceed **200** words. Each question carries 14 marks.

- 2. Define Binary Search Tree. Write an algorithm to implement insertion and deletion operation.
- 3. Write the difference between DFS and BFS.
- 4. Explain difference between Time Complexity and Space Complexity along with example.
- 5. Write a program to implement array based queue ? List its applications.

- 6. What is Stack Operation ? Convert the following infix expression into prefix and postfix format :

$$(A + B) * (S (D - E) + F) - G$$

- 7. What is Priority Queue ? Give implementation of it.
- 8. Write functions to implement insert() and traverse() of singly linked list.
- 9. What is Minimum Spanning Tree ? Construct the binary tree for the in-order and post-order traversal sequence given below :

In-order : "INFORMATION"

Post-order : "INOFMAINOTR"