Roll No. : .....

Total No. of Questions : **11**] [Total No. of Printed Pages : **3**

BC–383

B.C.A. (Part–III) Examination, 2022

DATA STRUCTURE

BCA–302

*Time : **3** Hours*] [*Maximum Marks : **70***

Section–A **(Marks : 2 × 10 = 20)**

Note :– Answer all *ten* questions (Answer limit **50** words). Each question carries **2** marks.

Section–B **(Marks : 4 × 5 = 20)**

Note :– Answer all *five* questions. Each question has internal choice (Answer limit **200** words). Each question carries **4** marks.

Section–C **(Marks : 10 × 3 = 30)**

Note :– Answer any *three* questions out of five (Answer limit **500** words). Each question carries **10** marks.

Section–A

1. Attempt all questions :

   (i) Define Stack.

   (ii) What is a Queue ?

   (iii) Define Link List.

   (iv) What is a Circular Link List ?

(v) Define Binary Tree.

(vi) Explain successor and predecessor in a tree.

(vii) What is Sorting ? Name any *five* sorting techniques used in data structure.

(viii) Define Searching and its types.

(ix) What is a weighted graph ?

(x) Define Hash Table.

Section–B

Note :– Attempt all *five* questions :

2. Differentiate between stack and queue in detail.

Or

Convert the following expression in prefix and post-fix :

A * B – C/D + E

3. Explain the various applications of link list.

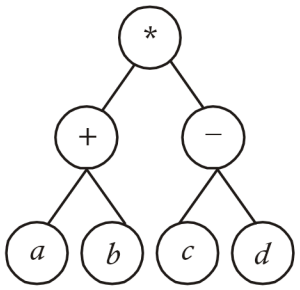
Or

How will you represent a queue in link list ?

4. Explain height balance tree.

Or

Convert the following binary tree into pre-order and post-order techniques :



5. Explain heap sorting with example.

Or

Perform Bubble sort in data structure.

6. Explain minimum spanning tree.

Or

Explain shortest path algorithm of a Graph.

Section–C

Note :– Attempt any *three* questions :

7. Discuss space and time complexity of an algorithm.

8. Explain types of link list used in data structure.

9. Evaluate tree traversal techniques used in binary tree.

10. Make a Comparison table for various sorting methods and explain them.

11. Perform Breadth first search and Depth first search for the following figure :