7. (a) What is Queue ? Discuss its various applications.

(b) Write an algorithm for insert an element to circular queue using arrays.

**Unit–IV**

8. What is Binary Tree ? What are its traversing methods ? Explain with the help of example.

9. Describe binary search tree and its applications. Write an algorithm for searching and inserting a node in binary search tree.



*Roll No.* : .....

Total No. of Questions : **9** ] [ Total No. of Pages : **4**

# 97670

**BCA 3rd Semester (New)**
**(Full & Reappear)**
**Examination, March–2021**

**DATA STRUCTURE-I**

Paper–BCA-202

*Time : **Three** Hours ]* *[ Maximum Marks : **80***

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

***Note*** :– Attempt *five* questions in all. Question No. **1** is compulsory and attempt four more questions by selecting *one* question from each Unit. All questions carry equal marks.

1. (a) What is String ? How is it stored in memory ?

(b) What is Algorithm ?

(c) What is Array ?

(d) What is use of header node in linked list ?

(e) Define priority queue.

(f) Write four applications of priority queue.

(g) Write the properties of tree.

(h) Give any *two* applications of graph.

**Unit–I**

2. Differentiate between :

(i) Linear and Non-linear data structure.

(ii) Homogenous and Non-Homogenous data structure.

(iii) Primitive and Non-primitive data structure.

(iv) Static and dynamic data structure.

3. Discuss the complexity of an algorithm. What do you understand by time and space tradeoff ? What is the significance of Big O Notation ?



**Unit–II**

4. (a) Write an algorithm to insert an element into a one-dimensional array.

(b) What is two dimensional Array ? How is it stored in memory ? Explain with the help of example.

5. (a) What is Linked List ? What are its advantages and disadvantages over array ?

(b) Write an algorithm to delete a specific element from singly linear linked list.

**Unit–III**

6. (a) What is Stack ? Explain *three* different applications of stacks with the help of example.

(b) How stack is implemented using array ? Write the algorithm of its basic operations.