

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

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**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.

