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B.C.A. Examination, 2023

(II Semester)

Paper : II

Concepts of Data Structure

Time : Three Hours] *[Maximum Marks : 75*

Note : Attempt any **five** questions. **All** question carry equal marks.

1. What is Data Structure? Difference between primitive data structure and non-primitive data structure. Explain the difference operations to be performed on data structures.

2. What is an Array? Describe various types of Array. Explain its representation also.

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3. What is stack? What are the basis operations performed on stack? Why stack is called a LIFO data structure?
4. What is Queue? How is the queue different from the stack? Write the algorithms for the insertion and deletion operations performed on the circular queue.
5. What do you mean by Linked List. Explain various operations performed on Linked Lists. Describe various types of Linked Lists.
6. What is binary tree? Mention the properties of a binary tree. How do you represent the binary tree in the computer's memory? Explain.
7. What is tree? Explain various tree terminologies. Write an algorithm for insertion and delection for tree operations.

8. What is sorting? List the different types of sorting techniques. What are the factors to be considered during selection of a sorting technique?
9. What do you mean by searching? What is the prerequisite for the binary search? Differentiate between the linear and binary search.
10. Explain the architecture and working of a Back propagation neural network.
11. Describe the short notes on any of **three** following:
    1. Sparse arrays
    2. D-queues and Priority queues
    3. Hashing
    4. Traversal of Binary Trees.