

Roll No. : .....

Total No. of Questions : 10 ]

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# **BPF-2217**

## **M.Sc. (Final) Examination, 2022 COMPUTER SCIENCE (For Due and Imp. Students only)**

Paper - MCS-201

**(Data and File Structure)**

*Time : 3 Hours ]*

*[ Maximum Marks : 100*

**Note :-** Answer *five* questions in all, selecting *one* question from each Unit. All questions carry equal marks.

### **Unit-I**

1. Discuss the following :
  - (i) Time and space complexity of algorithm in detail.
  - (ii) Abstract data type and Linear link list with example. 10,10
2. Explain and write down an algorithm to add a node at the given position in the link list with suitable example. 20

### **Unit-II**

3. Explain the following with example :
  - (i) Stack and its primitive operations
  - (ii) Recursion Array 10,10

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4. Explain the following with example :
- (i) Queue
  - (ii) Circular Queue 10,10

### Unit-III

5. Explain the following with algorithm and suitable example :
- (i) Binary Search
  - (ii) Bubble Sort 10,10
6. Explain the following with algorithm and suitable example :
- (i) Linear Search
  - (ii) Merge Sort 10,10

### Unit-IV

7. Explain binary tree with representation as array and link list with suitable examples. 20
8. Write short notes on the following :
- (i) Tree Traversal
  - (ii) B Tree and AVL Tree 10,10

### Unit-V

9. What is Graph ? Explain depth first traversal of a graph in detail with appropriate example. 20
10. What is File Organization ? Explain index sequential and multi-key file organization in detail with suitable example. 20