



K21U 1817

Reg. No. : .....

Name : .....

**III Semester B.Sc. Degree CBCSS (OBE) Reg./Sup./Imp. Examination,  
November 2021  
(2019 – 2020 Admission)  
CORE COURSE IN COMPUTER SCIENCE  
3B04CSC : Data Structures**

Time : 3 Hours

Max. Marks : 40

**PART – A  
(Short Answer)**

Answer **all** questions.

**(6×1=6)**

1. Define Linear Data Structure.
2. What is a Null pointer ?
3. What is time complexity ?
4. Define recursion.
5. What are the pointers of a Queue ?
6. What is a POLISH notation ?

**PART – B  
(Short Essay)**

Answer **any 6** questions.

**(6×2=12)**

7. Write down the algorithm for array insertion.
8. What are the operations of a data structure ?
9. Define a graph.
10. Explain Merge Sort.

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11. Define preorder tree traversal.
12. Explain polynomial representation with arrays.
13. What is a circular Queue ?
14. Briefly explain asymptotic analysis of an algorithm.

**PART – C  
(Essay)**

Answer any 4 questions.

**(4x3=12)**

15. Convert the following expression to postfix and prefix :  $A + B - (C * D/E) * F$ .
16. Write down the algorithm for post order traversal of a tree.
17. Explain stack operation with algorithm.
18. Compare Breadth First Search and Depth First Search.
19. Evaluate the following expression using algorithm :  $5 + 4 * 6 - 8 + 9/3$ .
20. Explain Binary Search algorithm.

**PART – D  
(Long Essay)**

Answer any 2 questions.

**(2x5=10)**

21. Explain infix to postfix expression algorithm with example.
22. Explain headed linked list, circular linked list and doubly linked list.
23. What are the traversals of a tree ? Explain.
24. Compare Quick sort and Merge sort with algorithm and example.