



**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**

**B.Sc.& B.C.A.DEGREE EXAMINATION –COMPUTER SCIENCE& APPLICATION**

**THIRD SEMESTER – APRIL 2019**

**16/17UCS3MC01&16/17UCA3MC03 – DATA STRUCTURES**

Date: 24-04-2019  
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

**PART – A (10 \* 2=20)**  
**Answer ALL questions**

1. Define primary data structures.
2. What is pointer arrays? Give an example.
3. Distinguish between stack and queue.
4. Convert the infix  $(a+b)*(c+d)/f$  into postfix & prefix expression
5. What are the advantages and disadvantages of linked list?
6. Define Doubly Linked List.
7. What are the tasks performed while traversing a binary tree?
8. List some representations of Graphs.
9. What are the various factors to be considered in deciding a sorting algorithm?
10. What is divide & conquer strategy?

**PART – B (5 \* 8=40)**  
**Answer all questions**

11. (a) Explain the control structures in detail.

**(OR)**

(b) Write a short note on representation of linear array in memory.

12. (a) What is a Stack? Explain with an example.

**(OR)**

(b) What is recursion? Explain in detail towers of Hanoi problem with an example.

13. (a) Explain in detail about the insertion in a linked list with an example.

**(OR)**

(b) Write a brief note on deletion operation in Linked List with an example.

14. (a) Construct an expression tree for the input  $ab+cde+**$

**(OR)**

(b) Write the algorithm for Depth-First traversal of a graph with an example.

15. (a) Explain the bubble sort with an example.

**(OR)**

(b) Write and explain the algorithm for linear search with example.

**PART – C (2 \* 20=40)**  
**Answer any TWO questions**

16. (a) Explain in detail about the variables, data types and string processing.

(b) Discuss in detail about the Queue operations with an example.

17. (a) Outline the steps involved in converting an infix expression into polish notation with the help of a stack. Trace the steps on the following expression.  $((a+b)*c)-d$

(b) Write the algorithm for Breadth-First traversal of a graph with an example.

18. (a) Write and explain the algorithm for merge sort with an example.

(b) Discuss about the binary search with an example.

\*\*\*\*\*