LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **COMPUTER SCIENCE**

THIRD SEMESTER – **APRIL 2023**

16/17/18UCS3MC01 – DATA STRUCTURES

Date: 02-05-2023 Dept. No. Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

PART – A **(10x 2 = 20 Marks)**

Answer ALL the questions

Q. No	
1	Define Data Structure.
2	List the use of a Linear array.
3	Define pointer array.
4	Define Stack.
5	Write the information present in the last node of a doubly linked list.
6	Write the structure of a singly linked list.
7	Define Graph.
8	Define Tree.
9	Write the advantages of binary search.
10	State Linear search.

PART – B **(5 x 8 = 40 Marks)**

Answer ALL the questions

11 a) Explain the memory representation of a two-dimensional array stored in a column major order.

(OR)

b) Write an algorithm to insert an element at a particular location in a linear array.

12 a) Explain the procedure involved in transforming infix expression into postfix.

(OR)

b) Write an algorithm to delete an element from a queue.

13 a) Explain the procedure to delete an element at a particular location in a singly linked list.

(OR)

b) Explain the procedure to delete the last element in a doubly linked list.

14 a) Explain pre order traversal with an example.

(OR)

b) Explain post order traversal with an example.

15 a) Discuss bubble sort with an example.

(OR)

b) Describe merge sort with an example.

PART – C **(2 x 20 = 40 Marks)**

Answer any TWO questions

16 a) Explain with example to identify the location of an element stored in a two-dimensional array.

b) Write an algorithm to insert an element

i) into a Stack

ii) into a Queue

17 a) Explain the insertion operation on doubly linked list with example.

b) Describe the breadth first search and depth first search techniques with example.

18 a) Explain Linear search and binary search with example.

b) Illustrate the storage representation of a graph with example.

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