LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

THIRD SEMESTER – **APRIL 2018**

16UCS3MC01– DATA STRUCTURES

Date: 03-05-2018 Dept. No. Max. : 100 Marks

Time: 09:00-12:00

Part – A

Answer all Questions **(10x2=20Marks)**

1. How will you traverse a linear array in memory?
2. Give the usage of array of pointers.
3. Distinguish between stack and queue.
4. Convert the infix (a+b)*(c+d)/f into postfix & prefix expression
5. Give the advantages and disadvantages of linked list.
6. What are the different types of linked list?
7. Define a Binary Tree.
8. Define Adjacency Matrix.
9. What is sorting?
10. Mention any two searching techniques

Part – B

Answer all Questions **(5x8=40Marks)**

11. (a) Briefly discuss the insertion and deletion operations of linear array with an examples.

(OR)

(b) Explain about the data structure operations with example.

12. (a) Explain the operation of stacks and queues with example.

(OR)

(b) Write and explain the towers of Hanoi algorithm.

13. (a) Discuss the algorithm to insert elements into a linked list with example.

(OR)

(b) Explain about the algorithm of deletion operation of a doubly linked list with example.

14. (a) Explain the tree representation in memory with suitable example.

(OR)

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

15. (a) Explain Bubble sort with an example

(OR)

(b) Explain Linear Search technique with an example.

Part – C

Answer any **TWO** Questions **(2x20=40Marks)**

16. (a) Discuss about the control structures with suitable example.

(OR)

(b) Write a program to convert infix to postfix notation. Convert the following expression to postfix form using stack A+(B *C – (D/E ↑ F) * G)

17. (a) Explain briefly about searching an element in a linked list.

(OR)

(b) Briefly explain the Binary tree traversals with example.

18. (a).Explain any the following sorting techniques with example

i) Insertion sort

ii) Merge sort

(OR)

(b) Discuss the algorithm for depth first search with example

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