



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – COMPUTER SCIENCE

THIRD SEMESTER – APRIL 2022

16/17/18UCS3MC01 – DATA STRUCTURES

Date: 23-06-2022

Dept. No.

Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

PART – A

(10x 2 = 20 Marks)

Q. No

Answer ALL the Questions

- 1 List the operations on data structure.
- 2 Define a linear data structure.
- 3 What is a pointer array?
- 4 Convert the infix expression $(2+3-4+5*6)$ into postfix.
- 5 What do you mean by FIFO structure?
- 6 List the basic feature of a Queue.
- 7 What is a directed graph? Write example.
- 8 Define height of a tree.
- 9 What is linear search?
- 10 Write the steps to perform insertion sort.

PART – B

(5 x 8 = 40 Marks)

Answer ALL the Questions

- 11 a) Explain row major order representation of a two-dimensional array.
OR
b) Explain the memory representation of a linear array.
- 12 a) Write an algorithm to insert an element in a Queue. Explain with example.
OR
b) Explain the algorithm to evaluate a postfix expression. Use the algorithm to evaluate the postfix expression $8\ 9\ 2\ +\ *\ 12\ 4\ / \ -$.
- 13 a) Write an algorithm to insert an element at a particular location in a singly linked list with example.
OR
b) Explain inserting an element in a doubly linked list as a first and a last element in a doubly linked list with example.
- 14 a) Explain Breadth First Search algorithm with example.
OR
b) Explain Depth First Search algorithm with example.
- 15 a) Explain binary search algorithm. Find the presence of 23 in the list using binary search algorithm 2, 5, 8, 12, 14, 16, 19, 23, 38, 48, 56.
OR
b) Describe the Selection sort algorithm.

PART – C

(2 x 20 = 40 Marks)

Answer any TWO Questions

- 16 a) Describe the multi-dimensional array representation with example.
b) Describe Recursion with example.
- 17 a) Write an algorithm to delete an element at a particular location in a doubly linked list with example.
b) Define a binary tree. Explain the storage representation of a binary tree with example.
- 18 a) Explain Bubble Sort algorithm with example.
b) Write an algorithm to count the number of elements in a Queue. Give example.

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