

BACHELOR OF SCIENCE (COMPUTER SCIENCE) (CBCS - 2018 COURSE)
S.Y.B.Sc.(Computer Science) Sem-IV : WINTER :- 2021
SUBJECT: DATA STRUCTURES USING C++

Day : Tuesday
Date 18-01-2022

W-20103-2021

Time : 02:00 PM-05:00 PM
Max. Marks: 60

N.B.:

- 1) All questions are **COMPULSORY**.
 - 2) Figures to the right indicate **FULL** marks.
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Q.1 Answer **ANY TWO** of the following: **[12]**

- a) Write a C++ program for implementing doubly linked list.
- b) Elaborate the concept of pre-order and post-order tree traversal with suitable example.
- c) Define Array as an ADT.

Q.2 Answer **ANY TWO** of the following: **[12]**

- a) Write a C++ program for arranging elements in 1 – D array using bubble sort.
- b) What is searching? Discuss its types.
- c) Differentiate between queue and stack.

Q.3 Answer **ANY TWO** of the following: **[12]**

- a) Write a C++ program to check the given string is a palindrome or not.
- b) Describe various operations performed on queue with the help of suitable functions.
- c) Differentiate between DFS and BFS.

Q.4 Answer **ANY THREE** of the following: **[12]**

- a) Describe any two dynamic memory management functions.
- b) Write a C++ function to obtain factorial of a number recursively.
- c) Explain deque and priority queue with example.
- d) Explain the concept of shortest path in a graph.

Q.5 Answer **ANY FOUR** of the following: **[12]**

- a) Differentiate between linear linked list and circular linked list.
- b) Describe various types of binary tree.
- c) Explain the concept of Binary Search Tree.
- d) Discuss various applications of arrays.
- e) Convert the following:
 - i) $p + q * r - s$
 - ii) $a + b - c * d / e$
- f) What is expression tree? Explain with example.

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