

Printed Pages – 4

Roll No. : .....

**B028315(028)**

**B. Tech. (Third Semester) Examination,  
Dec.-Nov. 2021**

**(AICTE Scheme)**

**(Electronics and Telecommunication Engg. Branch)**

**DATA STRUCTURES USING C++**

*Time Allowed : Three hours*

*Maximum Marks : 100*

*Minimum Pass Marks : 35*

*Note : Attempt all questions. Every question has four parts. Part (a) is compulsory. Attempt any two parts from (b), (c) and (d).*

**Unit-I**

1. (a) Write the benefits of Object Oriented Programming. 4

[ 2 ]

- (b) Define class and object. Explain the use of access specifiers (Public, private and protected with help of example. 8
- (c) What do you mean by friend function? How it is declared, defined and called? Explain with example. 8
- (d) What is Constructor? Explain types of constructor with example. 8

### Unit-II

2. (a) Define Virtual base class. 4
- (b) Write a C++ program to overload the '+' operator to add two strings. 8
- (c) Explain function overloading with the help of an example. 8
- (d) Define Inheritance. Explain the differences between Multiple and Multilevel Inheritance. 8

### Unit-III

3. (a) Define abstract class. 4

[ 3 ]

- (b) Develop a C++ Program to demonstrate the usage of *new* and *delete* operators. 8
- (c) Explain Virtual functions with example. 8
- (d) Write a C++ program demonstrating use of the pure virtual function with the use of base and derived classes. 8

### Unit-IV

4. (a) Define Linear Search. 4
- (b) Explain Binary search with the help of a C++ program. Give one example. 8
- (c) Write a program to sort an array of integers using Bubble Sort. Also show the output for following array : 45, 10, 70, 5, 18, 75, 55, 4, 60, 2 8
- (d) Explain how to implement Circular queue and Priority Queue with suitable example. 8

### Unit-V

5. (a) Define Linked Lists. 4

[ 4 ]

- (b) Describe the implementation of a binary search tree with the help of an example. 8
- (c) Explain sequential representation of graph using 8
- (i) Adjacency matrix
  - (ii) Adjacency list
- (d) Explain BFS and DFS graph traversal techniques with the help of example. 8