

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– IV(NEW) EXAMINATION – SUMMER 2023****Subject Code:2140705****Date:19-07-2023****Subject Name:Object Oriented Programming With C++****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Differentiate: OOP and POP. **07**
 (b) Write the characteristic of static data member and static member function. **07**
 Explain the concept with a suitable example.
- Q.2** (a) Explain the concept of friend function with a suitable example. **07**
 (b) What is a constructor? List the characteristics of a constructor. Explain different types with suitable example. **07**
- OR**
- (b) What is the use of destructor in C++? Explain with a suitable example. **07**
- Q.3** (a) Explain runtime polymorphism. Explain and demonstrate, how virtual function is used to achieve runtime polymorphism? **07**
 (b) Define a class name "Point" with two data member: variable x & y and member functions for getting the value for variables from user and displaying the value of variables. Define third member function that takes another Point object as an argument and returns the Euclidean distance between the two Point objects. [for point $P(x_1, y_1)$ and point $Q(x_2, y_2)$ Euclidean distance = $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$] **07**
- OR**
- Q.3** (a) Describe the use of "this" pointer with an example. **07**
 (b) Create a class coordinate containing three private variables: x , y and z . Perform operations for incrementing, adding and comparing object(s) by overloading ++, + = & = operators respectively. Define necessary functions to set and display the variables. **07**
- Q.4** (a) What is inheritance? List different types of inheritance. Explain any one type with a suitable example. **07**
 (b) Write a program which uses command line argument to copy the contents of a file A.txt into another file B.txt by reversing case of the characters. E.g. File A.txt: aBCd File B.txt: AbcD **07**
- OR**
- Q.4** (a) Explain different visibility modes with a suitable example. **07**
 (b) Explain various file mode parameters in C++. Write a program to copy the contents of a source file student1.txt to a destination file student2.txt character by character. **07**
- Q.5** (a) Explain various stream classes for console I/O operations. **07**
 (b) Define Exception. Write a C++ program to handle "division by zero" exception. **07**
- OR**
- Q.5** (a) Explain STL with its core components. **07**
 (b) Write a program for swapping two values of different data types using the concept of templates. **07**
