

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-IV EXAMINATION – WINTER 2025

Subject Code:3140705

Date:28-11-2025

Subject Name:Object Oriented Programming -I

Time:02:30 PM TO 05:00 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) (i) What happens when your program attempts to access an array element with an invalid index? **03**
(ii) What are the benefits of data field encapsulation?
(iii) What is the registration method for a button to register an Action Event handler?
- (b) Differentiate following: **04**
(i) abstract class with interface
(ii) String with String Buffer
- (c) Write a method that returns a new array by eliminating the duplicate values in the array using the following method header: public static int[] eliminate Duplicates(int[] list). Write a test program that reads in ten integers, invokes the method, and displays the result. **07**
- Q.2** (a) Compare static methods with instance methods. **03**
(b) How do you create a button with a text and a node? How do you set a handler for processing a button-clicked action? **04**
(c) What is exception? Explain the use of exception handling keywords with example. **07**
- OR**
- (c) How do interfaces support polymorphism? Explain with example. **07**
- Q.3** (a) What is polymorphism? What is dynamic binding? **03**
(b) Explain the use of File class to handle I/O. **04**
(c) Write the bin2Dec(String binary String) method to convert a binary string into a decimal number. Implement the bin2Dec method to throw a Number Format Exception if the string is not a binary string. **07**
- OR**
- Q.3** (a) How do you prevent a class from being extended? How do you prevent a method from being overridden? **03**
(b) Differentiate the followings: **04**
(i) Checked and Unchecked Exceptions
(ii) Text I/O and Binary I/O
(c) Write a program that lets users copy files. The user needs to provide a source file and a target file as command-line arguments using the command: java Copy source target **07**

- Q.4 (a)** Define the compare To method in a class implementing the Comparable interface. What are the benefits of implementing the Comparable interface? **03**
(b) What do you understand by thread? Describe the complete life cycle of thread. **04**
(c) Describe and compare Hash Map, Linked Hash Map, and Tree Map. **07**

OR

- Q.4 (a)** What is a recursive method? Write a recursive mathematical definition for computing 2^n for a positive integer n . **03**
(b) What do you mean by thread synchronization? How can you synchronize java threads? **04**
(c) Write a program to add ten elements in a list and traverse a list in both directions. **07**

- Q.5 (a)** What are the benefits of using generic types? How do you declare a generic type in a class? **03**
(b) Which method do you use to obtain an element in the collection from an iterator? Explain with example. **04**
(c) Which layout panes are supported by JavaFX? Write a program to create a login screen using Grid Pane. **07**

OR

- Q.5 (a)** How do you declare and invoke a generic method? **03**
(b) How do create and use anonymous inner class? **04**
(c) Write a program to define and register handlers for key pressed, key released, and key typed events using JavaFX. **07**
