GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– IV(NEW) EXAMINATION – SUMMER 2023

Subject Code:3140705   **Date:25-07-2023**
Subject Name:Object Oriented Programming -I
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.**

			MARKS
Q.1	**(a)**	What is the Java bytecode, and what is the extension of Java bytecode file? Which software is needed to run Java bytecode?	**03**
	(b)	Describe syntax errors (compile errors), runtime errors, and logic errors by giving suitable examples?	**04**

(c) Answer in brief (within 50 words):   **07**
    I.   Justify Java enables high performance.
    II.   Differentiate between while and do while loop?
    III.   How many times is the println statement executed?
           for (int i = 0; i < 10; i++)
           for (int j = 0; j < i; j++)
             System.out.println(i * j);
    IV.   If the value of variable x is 1 then what will be returned by the following expression:
           x % 2 = = 0

Q.2 **(a)** What is the use of this keyword? How it is different from super keyword?   **03**
(b) (i) Given that Thing is a class, how many objects and how many reference   **04**
variables are created by the following code?
        Thing item, stuff;
        item = new Thing();
        Thing entity = new Thing();
(ii) Examine following code. Write and justify output.

```
 public class MyClass {
public static void main(String[] args) {
C c = new C();
System.out.println(c.max(12, 29));
}
}
class A {
int max(int x, int y) { if (x>y) return x; else return y; }
}
class B extends A{
int max(int x, int y) { return super.max(y, x) - 10; }
}
class C extends B {
int max(int x, int y) { return super.max(x+10, y+2); }
}
```

(c) Write a program that defines class named StopWatch. The class contains: **07**
    • Private data fields startTime and endTime with getter methods.

- no-arg constructor that initializes startTime with the current time.
- A method named start() that resets the startTime to the current time.
- A method named stop() that sets the endTime to the current time.
- A method named getElapsedTime() that returns the elapsed time for the stopwatch in milliseconds.
- Declare object of StopWatch to demonstrate stop watch.

Hint: Use System.currentTimeMillis() to get current time in milliseconds.

OR

(c) Create a class called Employee that includes: **07**
  I. Three instance variables— id (type String), name (type String) and monthly_salary (double).
  II. A default constructor that initializes the three instance variables.
  III. A setter and a getter method for each instance variable (for example for id variable void setId(String id), String getId( )).
  IV. displayEmployee() method for displaying employee details.

Write a driver class named EmployeeTest that demonstrates class Employee's capabilities. Create two Employee objects and display each object's yearly salary. Then give each Employee a 10% raise and display each Employee's yearly salary again.

Q.3 **(a)** Differentiate between checked and unchecked exception? **03**
(b) Exemplify throw and throws clause of exception handling? **04**
(c) Demonstrate use of try catch block by catching ArithmeticExceptions and InputMismatchExceptions? **07**

OR

Q.3 **(a)** Describe thread life cycle with block diagram? **03**
(b) Differentiate between Thread class and Runnable interface for implementing Threads? **04**
(c) Write a program to make calculator that accepts input from commandline? Use java's exception handling mechanism to handle abnormal situation? **07**

Q.4 **(a)** Define Queue interface of java collection classes? **03**
(b) Explain types of polymorphism? **04**
(c) What are the differences between ArrayList and LinkedList? Demonstrates use of ArrayList with example? **07**

OR

Q.4 **(a)** Define Object Serialization? **03**
(b) What are the differences between text I/O and binary I/O? **04**
(c) Describe and demonstrate Binary I/O classes of java? **07**

Q.5 **(a)** Answer in one line: **03**
(i) Write the name of package in which all collection classes and interface are grouped.
(ii) Write the name of collection interface or abstract class which store and process object in a first-in, first-out fashion.
(iii) Write the name of method that checks whether the collection contains the specified element.
(b) List JavaFX UI controls? **04**
(c) What do you understand by event source and event object? Explain how to register an event handler object and how to implement a handler interface? **07**

OR

Q.5 **(a)** Enlist various Layout panes available in JavaFX? **03**
(b) Discuss JavaFX benefits? **04**
(c) Illustrate basic structure of JavaFX program? **07**

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