AUTUMN MID SEMESTER EXAMINATION-2023

School of Computer Engineering
Kalinga Institute of Industrial Technology, Deemed to be University
Object Oriented Programming using Java
[CS20004]

Time: 1 1/2 Hours   Full Mark: 40

Answer Any four Questions including Question No. 1 which is compulsory.
The figures in the margin indicate full marks. Candidates are required to give their answers in their own
words as far as practicable and all parts of a question should be answered at one place only.

1.   Answer all the questions.   [2 x 5]

a)Interface doesn't support multiple inheritance directly. State true or false with example

b)Justify the following statement with suitable example. Statement : Inner class can access the private data member of outer class

c) Is it possible to overload main method in java? State true or false. Justify your answer with an example.

d) Write the output of the following java code.

```
public class sft5{
public static void main (String arg[])
{
    int a=8, b=21;
    b= (a<<3)+(b>>3);
    System.out.println("Values are :"+a+" "+b);
}
}
```

e) Write the output of the following java code.

```
class Conversion
{
    public static void main(String args[])
    {
        byte b;
        int i = 257;
        double d = 323.142;
        System.out.println("\nConversion of int to byte.");
        b = (byte) i;
        System.out.println("i and b " + i + " " + b);
        System.out.println("\nConversion of double to byte.");
        b = (byte) d;
        System.out.println("d and b " + d + " " + b);
    }
}
```

Implement a Triangle class having three data members a,b,c as it's sides. This class includes appropriate constructors and two methods

i) Find-area(): is used to return the area of the Triangle

j)Find-perimeter():is used to return the perimeter of the Triangle

Also it should check that the sum of any two sides is greater than the third side. Otherwise it should display an error message. Implement the complete program to test the functionality of the class.

[5]

b) In an organization there are two types of Employees technical and Non technical, each with Name ,Department name, Unique Id. The rules for the salary calculation are as follows.

Earning=Basic+DA(40% of Basic)+HRA(15% of Basic).

Deduction=12% of Basic

Bonus=20% of Basic

Net Salary=Earning-Deduction+Bonus

Write the program in java to print the salary slip for an employee for the user entered Basic salary amount using method overriding technique.   [5]

3. a)Explain any four features of Object Oriented Programming with suitable example in java

[5]

b) Illustrate the concept of constructor overloading in Java with two arguments and three arguments where the arguments are taken from user - one from command line and the other one(two) using scanner class.   [5]

4. a) Write any two uses of "this" keyword in java with syntax. Whether "this" and "super" can be used within a single method. Justify your answer[yes/No] with an example.   [2+3]

b)   Implement a package geometry which contains a class circle. The circle class has one variable radius (double) and two methods void setRadius(double) to set the radius of the circle and double getRadius() to return the radius of the circle. Also implement an application class demo where the geometry package is imported and the area and perimeter of the circle is calculated.

[5]

5. a)Define an interface Calculate with a method as Interest() which takes two arguments such as principal and number of years and returns the interest amount. Define two classes - HDFC and ICICI which uses this interface to calculate interest. Write the complete program to print the interest amount of both the classes for the user entered principal amount and no. of years.

[5]

b) Implement a class Figure in Java having an abstract method as area() and define two other classes – Triangle and Rectangle which are derived from Figure. Find the corresponding area of both the shapes using Dynamic Method Dispatch technique.   [5]

*** Best of Luck ***