Semester: 4th
Subject Name:- Object Oriented Programming using Java & Code:-CS20004
Branch (s): - CSE, CSCE

SPRING MID SEMESTER EXAMINATION-2024

School of Computer Engineering
Kalinga Institute of Industrial Technology, Deemed to be University
Object Oriented Programming using Java
[CS20004/CC20004]

Time: 1 1/2 Hours **Full Mark: 20**

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

1. Answer all the questions. [1 Mark X 5]

a) List out the object oriented concepts in java. Define class and object with suitable example.

b) Find the output.

```
class Leftshift_operator
    {
        public static void main(String args[])
            {
                byte x = 64;
                int i;
                byte y;
                i = x << 2;
                y = (byte) (x << 2);
                System.out.print(i + " " + y);
            }
    }
```

c) Write the three uses of 'final' keyword in java.

d) Can we use this() and super() both together in a constructor ? Justify your answer.

e) Find the output with reason.

```
class A{
 int a=90;
}
class B extends A{
 int a=150;

 public static void main(String args[]){
```

```
A obj=new B();

 System.out.println(obj.a);
}
}
```

2. a) Explain the features of Object Oriented Programming with suitable example in java i.e. mentioned below?
i. Robust Language [2.5 Marks]
ii. Secured
iii. Compiled and interpreted language
iv. Portable language
v. Architecture Neutral

b) Write a program in java to receive five integers from user where three are from command line arguments and two are using scanner class and count the number of prime numbers in them. [2.5Marks]

3. a) Briefly explain the different types of inheritance in java with proper syntax. [2.5 Marks]

b) Write a program in java to create an abstract class Shape with two abstract methods getArea() , getPerimeter() and a non-abstract printInfo() method. Create two subclasses Circle and Rectangle, each implementing these abstract methods. The application Demo class demonstrates the usage of these classes by creating objects of Circle and Rectangle and invoking their methods. [2.5 Marks]

4. a) Write a program in java having three classes Apple, Banana and Cherry. Class Banana and Cherry are inherited from class Apple and each class has its own member function show() . Using Dynamic Method Dispatch concept, display all the show() method of each class. [2 Marks]

b) Write a class Complex in Java with two data members -real, img and overloaded constructors. It contains two methods - Swap() and Sum(). Swap method interchanges the values of real and img of an object and Sum method adds two complx numbers and returns a new complex object. Write the complete program to check the functionality of both the methods. [3 Marks]

5. a) Explain the different types of inner class with example in java. [2.5 Marks]

b) Create a package biodata which consists of two interfaces namely schooling, college and a class Student that implements these interfaces. Access the Student class in another package pack1 in a class Department and test it.

[2.5 Marks]

*** Best of Luck ***