IN SEMESTER MOCK LAB EXAM

Module Code: COMP 20043 **Module Name: OO Programming and Modelling**

Duration:1.30 Hours **Max. Marks: 100**

Instructions to Student

- **Answer *all the question.***
- **Sample program with description is given ,which can be used in solving the Lab exam exam. If the same program is rewritten no marks will be awarded for any answer.**
- **The marks received on the assessment will be scaled down to the actual weightage of the assessment which is 30 marks**
- **Compile and Run your files.**
- **Once the above process is done, COPY and PASTE all questions solutions along with screenshots of results in one single word file.**
- **Login to Moodle using your College-ID.**
- **Upload the word file to link created in Moodle (Submit your Lab exam solutions here)**

Module Learning Outcomes
The following LOs are achieved by the student by completing the assignment successfully

1. **Analyze the Object Oriented concept in the programming environment.**

/********Sample Program **********:**********/**

```
class Person {
   String name; int age;
   void talk(String message) {
      System.out.println(name + " says: " + message);
   }
}

class Main {
   public static void main(String[] args) {
      Person john = new Person();
      john.name = "Ahmed";
      john.age = 25;
      john.talk("Hello, I'm Ahmed");
   }}
```

This program features a class called Person with two instance variables, name and age, and one method called talk(). The talk() method takes a parameter called message and prints a message indicating that the person is talking and the content of the message.

In the Main class, we create an object of the Person class named john, set the values of its properties, and call its talk() method to print a message to the console.

/********:**********/**

1. Write a program in Java to define a class Triangle having 3 instance variables namely base, height ,area and 2 methods namely Assign() to assign values to the instance variables by getting it from main class and calcarea() to calculate and return the result to main class . Call all the methods of class Triangle using the object created from main class. The objects should pass parameters required to triangle class.

(30 marks)

2. Write a program in Java to demonstrate the concept of constructor overloading. The program should have comments regarding the same.

(30 marks)

3. Given an interface called Tax with a data member taxRate that has a value of 0.05 and member functions/methods calcTax() to calculate the income tax, calcNet() to calculate the net salary and display() to display the gross salary, the income tax and the net salary.
Note: Tax Amount is calculated as salary * taxrate.Net salary is calculated as gross salary-Tax Amount.

Now given a class called Salary with the data member gSalary and a constructor to assign value to the data member using parameter passing. Show how the class will be implemented while also implementing the interface Tax.

(40 marks)