Foundation University Islamabad

Rawalpindi Campus

End Term Examination – Summer 2019

Program:	BCSE / BSCS	**Semester:**	Summer
Course Title:	**CSC103 - Object Oriented Programming**		Sections: All (SE & CS)
Instructor Name:	Muhammad Sajid Qureshi	**Max Marks:**	50
Time Allowed:	**180** Minutes	**Date:**	August 2019

Name: **Reg. #** (3 digits only)

Wise Advices

- Attempt all questions. Be brief and to the point.
- Cutting/Erasing/Over-writing should be avoided.
- First formulate the answer and then start writing it.
- Attempt questions as per the following sequence.

Q 1 Understanding the programming basics: [3+ 2 = 5]

Write down the outputs of the following code.

(i)

```
class A {
   int i, j;
void show( ) {
   System.out.println("i and j:" + i +" "+j);
    } }
 class B extends A {
    int k;
 void show( ){
       System.out.println("k: "+ k);
    }
  void sum( ) {
       System.out.println("i + j + k:" + (i + j + k));
    } }
 class Test {
public static void main(String args[ ]) {
       B obj = new B();
       obj.i = 5;
       obj.j = 6;
       obj.k = 9;
       System.out.println("The contents are");
       obj.show( );
       obj.sum( );
}
}
```

(ii)

```
public class Test {
 public static void main(String[] args)
{
 m(new GraduateStudent( ));
 m(new Student( ));
 m(new Person( ));
 m(new Object( ));
 }
 public static void m(Object x) {
       System.out.println(x.toString( ));
 }
 }
 class GraduateStudent extends Student
 {   }

 class Student extends Person{
 @Override
 public String toString(){
   return "Student";
   }
 }
 class Person extends Object {
 @Override
 public String toString( ){
     return "Person";
 }
 }
```

Q 2 Classes, Inheritance and Polymorphism: [7 + 8 = 15]

a) Create a class **Doctor** having following specifications: [2, 2, 2, 1]

- Two data members — CNIC (Number) and Name (String).
- A copy constructor to clone an existing object of the class.
- SetData and ShowData functions to set and get values of the variables.

Call the SetData and GetData functions in the main function.

b) Derive two classes **Physician** and **Dentist** from the **Doctor** class. [2, 2, 2, 2]

- Add an additional data member **CurrentAppointment** (String) to the **Dentist** class and **WorkHours** (Number) to the **Physician** class.
- Override the SetData and ShowData methods in the two classes to process the additional data members. Now, do the following in the main program:
- Create a **reference** of the **Doctor** class. Then create **one object for each** of the **Physician** and **Dentist** classes.
- **Demonstrate the polymorphism** by calling the **ShowData method** for the two classes using reference of the Building class.

Q 3 Exception Handling: [10]

a) Create a class **Vehicle** having following specifications [2, 2, 2, 2, 2]

- Two data members — **Name** (String) and **RegYear** (Integer).
- Two functions **SetData** and **ShowData** functions to set and get values of the variables.
- In **SetData** method, add a **try block** that may **throw an exception** of type IllegalArgumentException, when the RegYear provided by the user is **>= 2000 OR RegYear <= 2019**.
- The **Catch block** should displays a message "Invalid Registration Year", when the excption is caught.
- The **Finally block** show displays a message "Please Enter The Vehicle Detail Carefully".

In the main program, create an object of the Vehicle class and call the **SetData** method twice. Once with valid and other with invalid Registration Year.

Q 4 Packages and Interfaces [3 + 7 = 10]

a) Create a package with name FruitPackage. Include the Interface and classes **Fruit, Apple, Graps** and **Test** (class having the main function) in the package. The Interface and Classes are required in **part-b** of this question.

b) Write the code in Java to create an Interface **Fruit** having following specifications: [2, 4, 4, 2]

- Two data members — **Type** (String) and **Price** (Integer).
- Two functions **SetData** and **ShowData** functions to set and get values of the variables.
- Now, create two classes **Apple** and **Graps** that implement the Interface **Fruit**. Override the SetData and ShowData methods in the two classes.
- In the main program, call the GetData and ShowData methods for each class through its object.

Q 5 File and Stream Handling [5 + 5 = 10]

b) Create a class **FileHandling** having following two methods:

- The **ReadFile** method reads a file "**F:\\MyText.doc**" and displays it on the screen. The method should handle the exception if the file is not opened successfully.
- The **WriteFile** method writes following text to a file "**D:\\MySlogan.txt**".

  "Knowledge – Honesty – Hard Work."

  The method should handle the exception if the file is not closedd successfully.

"Wisely integrate and represent the efforts you did for the subject."

Muhammad Sajid Qureshi

Head of Department
(Dr. Shariq Hussain)