SLIATE

SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION

(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

Higher National Diploma in Information Technology
Second year, First Semester Examination – 2023
HNDIT3012 Object-Oriented Programming

Instructions for Candidates:
Answer only five questions.

No. of questions: 06
No. of pages:03
Time: 3 hours

Question 01

I. What is meant by UML? (02 marks)
II. What is a class diagram? (02 marks)
III. State the difference between class and object (04 marks)
IV. Consider our government school system.
   a. Identify the classes in the school system. (03 marks)
   b. Specify the attributes and methods for each and every class. (04 marks)
   c. Draw a suitable class diagram for school system with specified relationship
   (05 marks)

(Total 20 marks)

Question 02

I. Explain the term 'class' in object oriented programing. (02 marks)
II. What is the difference between a normal class and a final class? (02 marks)
III. Compare private and protected key words. (04 marks)
IV. Write a simple Java class named **"Items"** according to the given guidelines (12 marks)

- Properties are Item number, Item name, Quantity and each property should have getter and setter methods for each property.
- **"receiveItems()"** which takes one parameter named **"Receives"** and increases the Item quantity.
- **"issueItems()"** which takes one parameter named **"issues"** and decrease the Item quantity.
- Use suitable access modifiers.

(Total 20 marks)

Question 03

I. Describe following terms in object oriented programing concepts.
   a. Inheritance (04 marks)
   b. Polymorphism (04 marks)
II. Compare the difference between overloading and overriding? (04 marks)
III. Write a java class according to the given guidelines for a restaurant app (12 marks)
"Invoice" is an abstract class having Invoice number, date, Invoice value. **"CalValue()"** is an abstract return type method in Invoice class. **"DineInInvoice"** and **"HomeDeleveryInvoice"** are two classes implement from the Invoice class, and override the CalValue() method. DineInInvoice class should include service charge, HomeDeliveryInvoice includes delivery charges with invoice value. You can assume that service charge=invoiceCharge*10%,
delivery charges= 50.0,(fixed)

(Total 20 marks)

Question 04

I.   Specify the type of errors in java programming.   (02 marks)
II. What is meant by "exception handling"?   (02 marks)
III. Compare the difference between checked and unchecked exceptions.   (04 marks)
IV. Consider the following program.   (12 marks)

```java
import java.io.*;
class Test{
 public static void main(String args[])
 {
     FileOutputStream fout=new FileOutputStream("abc.txt");
     String s="Java is my favourite ";
     byte b[]=s.getBytes();//converting string into byte array
     fout.write(b);
     fout.close();
     System.out.println("success...");
 }
}
```

    a. Identify two possible exceptions may be happen on above program.

    b. Re write the program with exception handling

(Total 20 marks)

Question 05

```java
import java.util.* ;
class ParseIntExample {
   public static void main(String[] args) {
       Scanner s = new Scanner(System.in);
       System.out.println("Enter a Number");
       String str = s.nextLine();
       int num = Integer.parseInt(str);
       System.out.println(num);        }}
```

Consider the above program to answer the following questions

I.   What is meant by Package in Java?   (02 marks)
II. Explain the purpose of the command: *import java.util.*?*   (02 marks)
III. Consider the statement *int num = Integer.parseInt(str)* in above program.
    a. Explain, what is Integer in the statement above?   (02 marks)
    b. The method signature of *nextLine()* method is *public String nextLine()*.
        Write the method signature of *parseInt(str)* method?   (02 marks)
    c. Is it necessary to include the statement
            import Java.lang.*
    to the above program? Explain your answer.   (04 marks)

IV. Write a program to read two integer numbers and print the sum of two numbers as output.
                                                           (08 marks)
                                                           (Total 20 marks)

Question 06

   I.   What is JDBC?   (02 marks)

   II.   Consider the java code given below.

```
import java.sql.*;
class MysqlCon{
public static void main(String args[]){
try{
      class.forName("com.mysql.jdbc.Driver");
      connection con=
driverManager.getConnection( "jdbc:mysql://localhost:3306/stuInfo", "root","1234");
      statement stmt=con.createStatement();
      resultSet rs=stmt.executeQuery("select * from student");
      while(rs.next())
      system.out.println(rs.getInt(1)+"  "+rs.getString(2)+"  "+rs.getString(3));
      con.close();
}catch(Exception e)
      { System.out.println(e);}
}
}
```

        a.   State the name of the Database?   (01 marks)

        b.   Specify the below details to login to database server

                i.   Username ....   (01 marks)

                ii.   Password ....   (01 marks)

        c.   Specify the table name which is used to retrieve data.   (01 marks)

        d.   Explain the use of rs.next() method.   (02 marks)

        e.   Write the purpose of above coding   (02 marks)

   III. Explain the usage of Swing package?   (02 marks)

   IV. Write the Java code to create the GUI below   (08 marks)

                                                              (Total 20 marks)