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

First Year, Second Semester Examination – 2019

HNDIT 1209- Object Oriented Programming

Instructions for Candidates:
Answer five (05) questions only
All questions carry equal marks.

No. of questions: 06
No. of pages : 07
Time :Three(03)hours

Question 01

i. State two main components in java platform. (02 marks)

ii. Mention a usage of Java 2 Standard Edition (J2SE) (02 marks)

iii. Write the output of the java code segments given below

a) `System.out.print("*\n*\t*\n*\t*\t*");` (02 marks)

b) `System.out.print("XYZ\'S\nPQR\"");` (02 marks)

c) `System.out.println(5+2-1%3*4);` (02 marks)

iv. State whether the following statements are True or False (05 marks)

a) String is a primitive data type in java ✓

b) **First-name** can be used as a valid identifier in java ×

c) In the java programming language, source code is first written in plain text files ending with **.java** extension ✓

d) **short** is the smallest integer data type in java ×

e) **long** data type use 64 bits to store data ✓

v. Write the output of the java-code segment given below (05 marks)

```
int x=5;
int y=3;
System.out.println(x++);
System.out.println(++y);
System.out.println(x>y||y++<x);
System.out.println(y);
System.out.println(x>=y & x<=y);
```

(Total 20 marks)

Question 02

i. Draw a flow chart for if else statement in java (02 marks)

ii. State two differences between if-else and switch statements (04 marks)

iii. Write the output of the java code segments given below. (06 marks)

a)

```
int n1=10;
int n2=20;
int x;
System.out.println((n1>n2)?n1:n2);
```

b)

```
int a = 10;
int b = 20;
switch (b) {
case 1:
    a += b;
case 20:
    a += b;
default:
    a += b;
case 2:
    a += b;
    }
System.out.println(a);
```

iv. Write a java program to check whether the given year is **leap year** or not.

Note: A given year is a **Leap year,** if it is divisible by 400 and 4, but not divisible by 100.

(08 marks)

(Total 20 marks)

Question 03

i. Write the basic syntax of while and do while loops in java (02 marks)

ii. State two differences between while and do while loops (02 marks)

iii. Write a java program to display square numbers from 1 to 1000 (1,4,9,16,25,36...1000) using **while loop** (05 marks)

iv. Write a java program to display the pattern given below using **for loop/s** (05 marks)

```
1
22
333
4444
55555
```

v. Write the output of the java code segments given below. (06 marks)

a)

```
int a = 10;
 int b = 3;
        for ( ; b < 10; ++b)
        {
            if (b % a == 5)
                continue;
            else if (b == 7)
                 break;
            else
               System.out.print(b + " ");
        }
```

b)

```
for(int x=0,y=5;x<y;x++,y--){
   System.out.print(y+" ");
}
```

(Total 20 marks)

Question 04

i. State a difference between int and Integer (03 marks)

ii. Write the output of the code segment given below (05 marks)

```
String text="Higher National Diploma in IT";
String v1="Java";
String v2="java";
System.out.println(text.length());
System.out.println(text.charAt(5));
System.out.println(text.substring(8,11));
System.out.println(v1.equals(v2));
System.out.println(v1.equalsIgnoreCase(v2));
```

iii. Declare an array called **"st_marks"** of type int to store marks of 100 students who sat for 8 different subjects (03 marks)

iv. Write the output of the java code segment given below (03 marks)

```
int x[]={1,2,3,4,5};
int y[]={10,20,30,40,50};
int z[]=new int[5];
   for(int i=0;i<z.length;i++){
      z[i]=x[i]+y[i];
   }
   for(int p=0;p<z.length;p++){
      System.out.print(z[p]+" ");
   }
```

v. Write java code segments to handle the exceptions given below (06 marks)

a) `System.out.print(10/0);`

b)

```
String x=null;
System.out.println(x.length());
```

(Total 20 marks)

Question 05

i. Inheritance is one of the characteristics of Object Oriented Programming Languages.

a) Define inheritance (02 marks)

b) Mention the keyword which is used for inheritance in java- (01 mark)

c) Does java support multiple inheritance? (01 mark)

ii. State a difference between a method and a constructor. (02 marks)

iii. You have been asked to design a student class to keep records of students in a certain school.

a) Create a java class called "Student" with attributes *name* and *age* (02 marks)

b) Create a constructor to assign values to *name* and *age* (04 marks)

c) Write a method called "display()" to display the values of instance variables *name* and *age* (02 marks)

d) Create an instance of the student class with following attributes and invoke the "display( )" method

name: Kamal , age: 20 (03 marks)

iv. Write the output of the code given below (03 marks)

```
class Person{
   public void eat(){
   System.out.println("Eating- Person");
   }
}
class Student extends Person {
   public void eat(){
   System.out.println("Eating- Student");
   }
}
public class Test{
   public static void main(String args[]){
   Student st1=new Student();
   Person st2=new Student();
   Person st3=new Person();
   st1.eat();
   st2.eat();
   st3.eat();
}
}
```

(Total 20 marks)

Question 06

i. Define abstraction in java (02 marks)

ii. State two difference between java abstract methods and java interfaces (04 marks)

iii. Write the output of the java program given below (06 marks)

a)

```
interface Intce {
    final int x = 100;
    void show();
}
class TestPr1 implements Intce {
    public void show() {
        System.out.println("Show this");
    }
    public static void main (String[] args){
        TestPr1 ob1 = new TestPr1();
        ob1.show();
        System.out.println(x);
    }
}
```

x = 100

b)

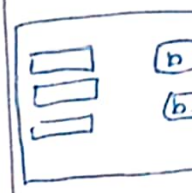
```
class Calculate{
int value;
Calculate(){
   value++;
   System.out.print (" "+value);
}
public static void main(String args[]){
   Calculate c1=new Calculate();
   Calculate c2=new Calculate();
   Calculate c3=new Calculate();
}
}
```

iv. Draw an appropriate diagram for the output of the java program given below

```
import java.awt.*;
public class GuiEx extends Frame{
    TextField tf_1,tf_2,tf_3;
    Button btn1,btn2;
    GuiEx(){
        tf_1=new TextField();
        tf_1.setBounds(40,50,150,20);
        tf_2=new TextField();
        tf_2.setBounds(40,100,150,20);
        tf_3=new TextField();
        tf_3.setBounds(40,150,150,20);
        tf_3.setEditable(false);
        btn1=new Button("ADD");
        btn1.setBounds(40,200,50,50);
        btn2=new Button("SUB");
        btn2.setBounds(120,200,50,50);

        add(tf_1);
        add(tf_2);
        add(tf_3);
        add(btn1);
        add(btn2);

        setSize(400,400);
        setLayout(null);
        setVisible(true);
        }
    public static void main(String[] args) {
        new GuiEx();
    }}
```



(08 marks)

(Total 20 marks)