



# 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 – 2017

HNDIT1209 Object Oriented Programming

Instructions for Candidates:

Answer only five questions

No. of questions: 6

No. of pages: 6

Time: 3 hours

### Question 01

- I. What is Java Virtual Machine? (2 marks)
- II. Java Development Kit (JDK) is a software development environment used for developing java programs. State four major components in JDK. (4 marks)
- III. Explicit casting is one of the data type conversions in java. Discuss why we need explicit casting using an appropriate example. (3 marks)

IV. Write the output of each java code segments shown below. (6 marks)

a. 

```
System.out.print ("S\t L\t It A\t T\t E\n");
System.out.println ("HNDIT");
```

b. 

```
int a=20;
System.out.println(a++);
System.out.println(a);
```

c. 

```
int v1,v2,v3;
v1=2; v2=3; v3=5;
System.out.println(v1+v2-v3%v2);
System.out.println(v3>>2);
```

V. State whether the following statements are correct or incorrect (5 marks)

- a. Values of instance variables are unique to each instance of a class.
- b. `$nextvar`, `final`, and `_value` are valid identifiers in java.
- c. `byte b=126;` will compile without warning or error.
- d. An import statement can occur either before or after package statements.
- e. The operator `=` is used for initialization, assignment and test for equality

(Total 20 marks)



## Question 02

- I. What is meant by iterative structure (2 marks)
- II. State two differences between *while* and *do while* loop. (4 marks)
- III. What are the advantages of using iterative structures in programming (3 marks)
- IV. What would be the output of the code segments given below? (6 marks)

a.

```
int i=0;
while (i<5){
    System.out.print(i);
    i++;
}
```

b.

```
int i=0;
do {
    System.out.print(i);
    i++;
}while (i<5);
```

- V. Write a complete java program using switch to display the appropriate arithmetic operation as output when user enters a certain operator as input.

Input (Operator)	Output (Arithmetic Operation)
+	Addition
-	Subtraction
*	Multiplication
/	Division
Any Other	Not Allowed

(5 marks)

### Question 03

- I. What is an array (2 marks)
- II. Write a java code to declare a double type array, named **values** and insert the data as given below.
- Values → 

24.0	35.5	67.4	65.0	33.0	86.0
------	------	------	------	------	------
- III. Write a java code segment to display the values at odd indexes in above constructed array using while loop. (4 marks)
- IV. Declare an enum called **season** to store "WINTER", "SUMMER", "SPRING", "FALL" constant data (3 marks)
- V. What would be the output of the code segments given below? (6 marks)
- (5 marks)

```
class Display
{
    public static void main(String args[])
    {
        for(int i=0;i<10;i++)
        {
            System.out.println();
            for(int j=0;j<10-i;j++)
            {
                System.out.print(i);
            }
        }
    }
}
```

#### Question 04

- I. What is a class (2 marks)
- II. You have been asked to develop a java program to calculate the net salary of an employee in a certain organization. It is necessary to store employee number (**empNo**), employee name (**empName**), basic salary (**basicSalary**) and overtime hours. Create a class as given description (4 marks)
- a. Class name is Employee
  - b. All class fields are only accessible to sub classes, but not to other classes.
- III. Create Parameterized class constructor to initialize the instances (3 marks)
- IV. Create sub classes Labor with employee overtime hours (**OT\_Hours**) and a public method called **calNetSalary()** to calculate net salary of an employee using following formula. (6 marks)
- $\text{Net Salary} = \text{Basic Salary} - (\text{Basic Salary} * 10\%) + (\text{overtime hours} * 750)$
- V. What would be the output of the code segments given below? (5 marks)

```
class Student
{
    protected String course = "HNDIT";
    protected String Subject = "IT1209";
    protected int attempt = 1;
}

class RepeatStudent extends Student
{
    private String Subject = "Java";
    private int attempt = 2;

    RepeatStudent ()
    {
        course = "Information Technology";
        this.attempt = 3;
    }

    public static void main(String args[])
    {
        RepeatStudent Obj = new RepeatStudent();
        System.out.println("Title :"+Obj.course);
        System.out.println("Subject :"+Obj.Subject);
        System.out.println("Hours :"+Obj.attempt);
    }
}
```



### Question 05

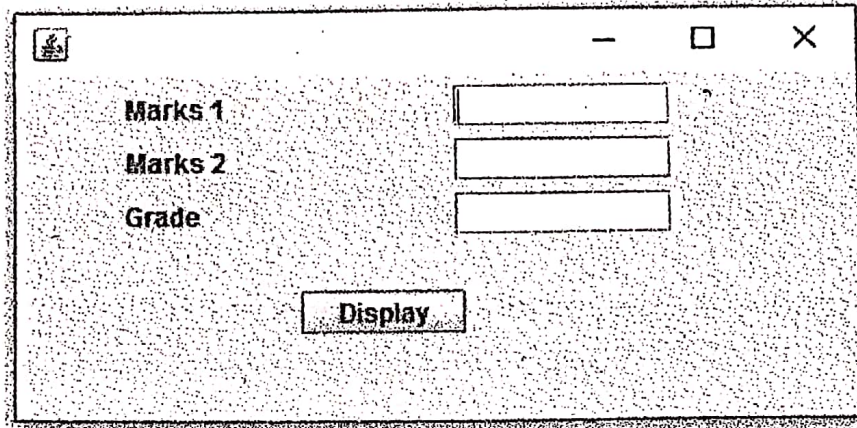
- I. What is polymorphism in object oriented programming (2 marks)
- II. State two differences between method overloading and method overriding (4 marks)
- III. What is an interface, explain (3 marks)
- IV. Explain the code segments given below? (6 marks)

```
interface Account{
    double amount=100000.00;
    double interestRate();
}
class FixedAccount implements Account{
    public double interestRate(){
        return 10.0;
    }
}
class SavingsAccount implements Account{
    public double interestRate(){
        return 20.0;
    }
}
class AccountType{
    public static void main(String args[]){
        Account acc1=new FixedAccount();
        System.out.println(acc1.interestRate());
    }
}
```

- V. Write a java code to create a text file named Data.txt in hard disk with your name in that file (5 marks).

### Question 06

- I. What is javax.swing package (2 marks)  
II. Explain the usages of the java GUI methods given below. (4 marks)  
    a. setBounds()  
    b. setSize ()  
III. What is meant by event listener in Java (3 marks)  
IV. Write a complete java program to design the GUI shown below? (6 marks)



- V. Explain the output of the program given below (5 marks)

```
import java.applet.Applet;
import java.awt.*;
public class Graphics extends Applet{
    public void paint(Graphics g){
        g.setColor(Color.blue);
        g.drawString("SLIATE",200, 50);
        g.drawRect(70,100,50,50);
        g.setColor(Color.red);
        g.drawLine(10,30,10,300);
    }
}
```