



# 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 – 2016

HNDIT1209 Object Oriented Programming

Instructions for Candidates:  
Answer only five (05) questions

No. of questions: 06  
No. of pages: 05  
Time: Three (03) hours

### Question 01

- (i) What are the major editions in java? (02 marks)
- (ii) What is the full form of JDK? (01 mark)
- (iii) What is the specification that provides runtime environment in which java byte code can be executed? (02 marks)
- (iv) Which command is used to compile a java program? (02 marks)
- (v) What are the sizes of the following data types? (03 marks)
- a. int
  - b. long
  - c. short
- (vi) Write the output of the following Java code segments? (06 marks)
- a. 

```
int count=1;
System.out.print("Counter value is :"+(++count));
```
- b. 

```
System.out.print("\SLI\tA\tT\tE\");
```
- (vii) What is meant by *garbage collection* in Java? (04 marks)

**(Total 20 marks)**

### Question 02

- (i) What is meant by “control statement” in Java? (02 marks)
- (ii) What is the general syntax of **if – else** selection structure in Java? (03 marks)
- (iii) Write the output of the following Java code segment? (03 marks)

```
int EM =10;
int AM =60;
if( (EM <40)|| (AM <40))
    System.out.println("Fail ");
else
    System.out.println("Pass ");
```

- (iv) Consider the following scenario? (10 marks)  
A telecommunication company is offering a package for its customers as Monthly rental is Rs.300.00, First 1000 minutes is free of charge and for any additional minute Rs.1.00 per minute is charged. The government taxes include 15% of value added tax and 10% of telecommunication levy.  
Write a program to calculate the monthly bill value considering the number of minutes as the input.
- (v) What is the main difference between *while* and *do- while* iterative structures? (02 marks)

**(Total 20 marks)**

### Question 03

- (i) What is an array in computer programming? (02 marks)
- (ii) What is the general syntax of declaring an array in Java? (03 marks)
- (iii) What is the output of the following code segment? (03 marks)

```
int index=10;
long[] Student =new long[index];
System.out.println(Student[10]);
```

- (iv) Write the Java code segment to find out the email- **user\_name@mail\_server.com**, is valid or not according to the given criteria. (10 marks)
  - a. '@' symbol should appear before '.' symbol.
  - b. The user name should be at least two characters long.
  - c. Mail server name should be at least two characters long.
  - d. Top level domain name should be at least two characters long.
- (v) Why *StringBuffer* is useful in java programming? (02 marks)

**(Total 20 marks)**

#### Question 04

- (i) What are the advantages of Object Oriented Programming? (02 marks)  
(ii) Write 3 access modifiers used in java language. (03 marks)  
(iii) What is the output of the following code segment? (03 marks)

```
class Student
{
    int IndexNo;
    String name;
    Student(int id,String name)
    {
        IndexNo = id;
        name = name;
    }
    void display()
    {
        System.out.println(IndexNo + " "+name);
    }
    public static void main(String args[]){
        Student Student1 = new Student(111,"Waruna");
        Student Student2 = new Student(321,"Thimira");
        s1.display();
        s2.display();
    }
}
```

- (iv) Consider the following scenario and write the expected Java code (10 marks)  
"ABC dairies" is a dairy products company located in Colombo. It markets two products imported from New Zealand. It markets both milk powder and fresh milk. Fresh milk is contained in different size bottles and milk powder is contained in packets of different sizes.
- Write Java code for Company class including private data such as company name, company address and country of origin.
  - Write the constructor of Company class to initialize company data.
  - Write java code for Product class inheriting from Company class including private data such as product type, net weight, and price.
  - Write the constructor of Product class with parameters to initialize the class.
  - Write displayData() in Product class to print all information from both super class and sub class.
- (v) What is the use of this() in Java programming? (02 marks)

**(Total 20 marks)**

### Question 05

- (i) What is polymorphism in object oriented programming? (02 marks)  
(ii) What are the methods used to implement polymorphism in Java? (03 marks)  
(iii) Write the output of the following Java code segments? (03 marks)

```
class Vehicle
{
    void run()
    {
        System.out.println("Vehicle is running");
    }
}
class Bike extends Vehicle
{
    void run()
    {
        System.out.println("Bike is running safely");
    }
    public static void main(String args[])
    {
        Bike obj = new Bike();
        obj.run();
    }
}
```

- (iv) What is meant by abstraction in Java object Oriented programming (02 marks)  
(v) What are the methods used to achieve abstraction in Java programming (02 marks)  
(vi) What is an exception in Java programming? (02 marks)  
(vii) Consider the following Java code segment with bugs. Rewrite the code with additional coding to fix the bug.(Handle the exceptions) (06 marks)

```
int[] workingDay= new int[5];
workingDay[7]=8;
```

**(Total 20 marks)**