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 – 2015
HNDIT1209 / IT 2001- Object Oriented Programming / Programming in JAVA

Instructions for Candidates:	No. of questions : 06
Answer five (05) questions only	No. of pages : 07
All questions carry equal marks.	Time : Three (03) hours

Question 01

(i) Write the default value of given data types in JAVA.

    a. byte

    b. int

    c. String

    d. boolean

(04 marks)

(ii) Write the output of the following code segments.

    a.
```
int x = 2;
System.out.print(x +"  != ");
System.out.println(2*x);
```

    b.
```
System.out.print("\"Hello\\\n Ann!");
```

    c.
```
int break = 3;
System.out.print(--break);
```

(06 marks)

(iii) Evaluate the following expressions for x=2, y=5 and z=9

      a. x + y * 5 – z

      b. (z/x)+ y/2 + x/2

      c. z%5 + 5*3+1

(06 marks)

(iv) What is data type conversion? Explain with an example.

(04 marks)

(Total 20 marks)

Question 02

(i) Rewrite the given code segment with **<u>only one</u>** *if* statement.

```
if(attendance >= 80)
        if(assignmmentMarks >= 40)
                eligibility = true;
```

(04 marks)

(ii) Consider given code segment.

    int number = 2;

Design a *SWITCH* to display bellow result.

Value of *number* variable	Display message
1	Number is One
2	Number is Two
Any other value	Number is not defined

(06 marks)

(iii) Write general syntax of *Do – While* loop.　　　　　　　　(04 marks)

(iv) Write a complete JAVA program to display *Summation* of *Even numbers* between 0 and 100 using a *for* loop. (0 and 100 are not included)

(06 marks)

(Total 20 marks)

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Question 03

(i) What is an Array? (02 marks)

(ii) Write the code segments to perform following tasks.

a. Create a **String** array named *days* which can hold 7 String values.

(02 marks)

b. Create a **char** array named *vowels* and initialize it. (Either capital letters or simple letters)

(02 marks)

c. Print the second element in the following integer array. Array name is *score*.

4	5	6	9	1	8	7	2

(02 marks)

d. Replace the value 7 with the value 9 in the following integer array. Array name is *score*.

4	5	6	9	1	8	7	2

(02 marks)

(iii) Write answers to question *a* to *c* by considering the given JAVA code segment.

String x="I love Java Programming";

a. What is the output of the following code?

System.out.println(x.charAt(5));

(02 marks)

b. Write the line of code to get the number of characters in the above string.

(02 marks)

c. What would be the output of following code segment?

System.out.println(x.subString(1,4));

(02 marks)

(iv) Consider the given code segment.

```
String x="I love Java Programming";
String y ="I love Java";
```

Write the code segment to compare two variables (x and y). If x and y variables have same value display a message "**same**" otherwise display a message "**different**".

(04 marks)

(Total 20 marks)

Question 04

(i) Consider the following scenario.

You are asked to design a cylinder class using JAVA language to keep records on cylinders manufactured by a company. The company needs to store the cylinder color, radius and height for each cylinder. Design the cylinder class with following properties.

a. Encapsulated instance variables: **color**, **radius** and **height**.

(03 marks)

b. **Constructor** of the class to initialize encapsulated variables with passing arguments from calling program.

(04 marks)

c. Public *getColor* method to return the color of the cylinder.

(03 marks)

d. Public *displayVolume* method to calculate the volume of the cylinder and print it.

(Volume of a Cylinder = (22/7) * radius^2 * height)   (02 marks)

e. Write the code segment to create an instance of the cylinder class passing following values for the instance variables.

color = red, radius = 7.0, height = 20.0

(02 marks)

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(ii) What is an **Exception** in JAVA?

(02 marks)

(iii) Write a Java code using *try catch* blocks to handle the exception when trying to access an array index out of its range.

(4 marks)

(Total 20 marks)

Question 05

(i) Consider given code segment. (Read the comment carefully)

```
abstract class Shape
{
// Shape contains abstract methods only
}
```

a. Can you create an object using *Shape* class?

(02 marks)

b. Explain your answer.

(02 marks)

(ii) Write a JAVA code segment to design a class named as *CheckingAccount* using the bellow interface. (You are not expected to define body of the *CheckingAccount* class)

```
public interface BankAccount
{
// Code here
}
```

(04 marks)

(iii) Write answers to *a* and *b* from the given code segment.

```
public class Ati  extends Sliate
{
// Code here
}
```

a. What is the name of **Supper Class**?   (02 marks)

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b. What is the name of **Sub Class**?

(02 marks)

(iv) When methods are overloaded, explain how JAVA would select matching method.

(02 marks)

(v) What are the stages of **Thread Life Cycle in JAVA**?

(04 marks)

(vi) Name a class or an interface which can be used to create a thread in JAVA.

(02 marks)

(Total 20 marks)

Question 06

(i) You are given *App.class* applet file. You would be asked to display that in your web browser **300** pixels **width** and **250** pixels **height** screen. Write the suitable HTML tag(s) with attribute values to display your applet. (You are not expected to write complete HTML file)

(04 marks)

(ii) Write a JAVA code segment to draw a **Line** between (10, 10) and (50, 50) coordinates. (Hint: Use bellow incomplete JAVA code segment)

```
import java.awt.*;
import javax.swing.*;

public class App2 extends JApplet {

        public void paint(Graphics g) {
         // Code here
         }

}
```
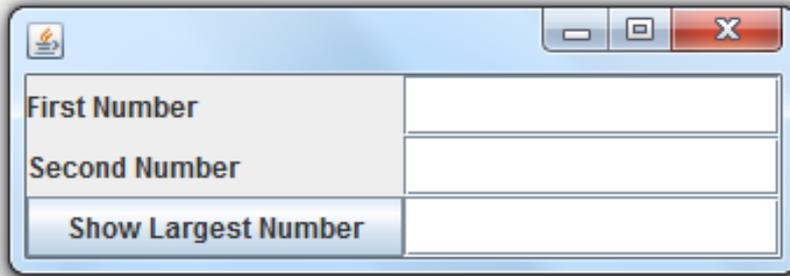(06 marks)

(iii) Write complete JAVA codes to display given user interface.

(10 marks)

(Total 20 marks)

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