INTI
International College Penang
LAUREATE INTERNATIONAL UNIVERSITIES

**FINAL**
Examination Paper

(COVER PAGE)

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| Session | : | **April 2016** |
| Programme | : | Diploma in Electrical and Electronic Engineering (DEEI) |
| Course | : | **CSC2181: Object-Oriented Programming in Java** |
| Date of Examination | : | 25 July 2016, Monday |
| Time | : | 5.00pm – 7.00pm |
| Duration | : | 2 Hours Reading Time : Nil |
| Special Instructions | : | |

This paper consists of **SIX (6)** questions. Answer any **FOUR (4)** questions in the answer booklet provided. All questions carry equal marks.

**IMPORTANT NOTE** : **THIS PAPER SHOULD NOT BE TAKEN OUT OF THE EXAMINATION HALL**

Materials Permitted :
Nil

Materials Provided :
Answer Booklet

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| Examiner(s) | : | **Ms. Chern Huey Rong** |
| Moderator | : | Dr. Vincent Khoo |

*This paper consists of 7 printed pages, including the cover page.*

INTI INTERNATIONAL COLLEGE

DIPLOMA IN ELECTRICAL AND ELECTRONIC ENGINEERING (DEEI)
CSC2181: OBJECT-ORIENTED PROGRAMMING
FINAL EXAMINATION: APRIL 2016 SESSION

Instructions: This paper consists of **SIX (6)** questions. Answer any **FOUR (4)** questions in the answer booklet provided. All questions carry equal marks.

**Question 1**

(a) Date myDate = new Date("Cindy", 9.30 , "Wednesday", "Movie");

Write the most appropriate attributes and constructor for class Date.

(5 marks)

(b) Write a class named TestClass and add a String data field called data1. The data field should be private to the class. Now, add a constructor that accepts a starting value for data1 as its single parameter, and public methods for setting and retrieving the value of data1. Call these methods setData() and getData().

(8 marks)

(c) Write a method that returns true if the int parameter a is larger than int parameter b by 2 or more.

(6 marks)

(d) Give an example code that illustrates inheritance and method overriding.

(6 marks)

**Question 2**

(a)
```
public abstract  class Tax {
    public abstract float taxPayable(float yearlyIncome);
}
```

Assume that if a person's yearly income is less than 24000, there is no tax, otherwise there is a 10% tax.

```
public class Engineer {
    private float yearlyIncome;
}
```

Modify this code so the class Engineer inherits from class Tax and write a possible declaration for method taxPayable().

(9 marks)

(b) Explain the difference between **method overloading** and **constructor overloading** and provide example code.

(10 marks)

(c) Write a method that receives an array of integers; return true if 6 appears as either the first or last element in the array. The array will be length 1 or more.

(6 marks)

**Question 3**

(a) A method **createStudent()** receives 3 parameters, String name, float cgpa and int age. Inside the method, an object based on class Student is created and the values are set using constructor. Then the object is returned from the method.

The constructor for class Student

```
public Student(String name, float cgpa, int age) {
    this.name = name;
    this.cgpa = cgpa;
    this.age = age;
}
```

Based on this information, write a possible declaration of method **createStudent()**.

(5 marks)

(b) Create a class called Book to represent a book. A Book should include four pieces of information as instance variables- a book name, an ISBN number, an author name and a publisher. Your class should have a constructor that initializes the four instance variables. Provide a mutator method and accessor method (query method) for each instance variable. In addition, provide a method named getBookInfo that returns the description of the book as a String (the description should include all the information about the book). Write a test application named BookTest to create an array of object for 30 elements for class Book to demonstrate the class Book's capabilities.

(13 marks)

(c) Implement a Java method that calculates the sum of digits for a given char array consisting of the digits '0' to '9'. The function should return the digit sum as a long value.

(7 marks)

**Question 4**

(a) What is the output of the following code:

```
public class TestArray
{
      public static void main(String [] args)
      {
            int [][] myArray = new int[3][];
            for (int i = 0; i < myArray.length; i++)
            {
                  myArray[i] = new int[i + 1];
                  for (int j = 0; j < myArray[i].length; j++)
                  {
                        myArray[i][j] = i + j;
                  }
            }
            for (int i = 0; i < myArray.length; i++)
            {
                  for (int j = 0; j < myArray[i].length; j++)
                        System.out.print(myArray[i][j] + ";
                        ");
                  System.out.println();
            }
      }
}
```

(9 marks)

(b)

```
public interface Movement {
      public boolean CanSwim();
      public void FavoriteFood();
}

public class Dolphin implements Movement {

}
```

From the information above, write a possible code for class Dolphin.

(5 marks)

(c) Write a recursive method that counts and returns the number of "A" in a given string.

(11 marks)

**Question 5**

(a) What is final variable and final method? Write down the reasons to use them.

(6 marks)

(b) What is JVM (Java Virtual Machine)?

(6 marks)

(c) What does the following program print?

```
public class Mystery2 {
      public static void main( String args[] )
      {
            int count = 1;
            while ( count <= 10 ) {
                  System.out.println( count % 2 == 1 ? "****"
                  : "++++++++" );
                  ++count;
            }
      }
}
```

(10 marks)

(d) What type of variables can a class consist of?

(3 marks)

**Question 6**

(a) What are 'pass by reference' and 'pass by value'?

(6 marks)

(b) State the outcome of following math library method calls.

(i) Math.abs( 23.7 )
(ii) Math.abs( 0.0 )
(iii) Math.abs( -23.7 )
(iv) Math.ceil( 9.2 )
(v) Math.ceil( -9.8 )
(vi) Math.floor( 9.2 )
(vii) Math.floor( -9.8 )
(viii) Math.max( -2.3, -12.7 )
(ix) Math.log( Math.E )

(9 marks)

(c) List **FIVE** differences between constructor and method in java.

(10 marks)

**-THE END-**

*csc2181(F)Aprill2016*