INTI International University & Colleges

FINAL
Examination Paper

(COVER PAGE)

Session	:	**APRIL 2017**
Programme	:	Diploma In Information And Communication Technology (DICTN)
Course	:	**ICT2100: Object Oriented Programming**
Date of Examination	:	04 August, 2017 (Friday)
Time	:	5:00pm – 7:00pm Reading Time : Nil
Duration	:	2 Hours

Special Instructions :

Answer any **FOUR (4)** questions in the answer booklet provided.

Materials permitted :
Non-programmable Calculator

Materials provided :
Nil

Examiner(s)	:	**Siti Hajar** , Lai Kim Min
Moderator	:	Siti Hawa Mohamed Said

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

DIPLOMA IN INFORMATION AND COMMUNICATION TECHNOLOGY PROGRAMME (DICTN)
ICT2100: OBJECT-ORIENTED PROGRAMMING
FINAL EXAMINATION: APRIL 2017 SESSION

Instruction: This paper consists of **SEVEN (7)** questions. Answer **ALL** questions in the answer booklet provided.

SECTION A: (40%)

Question 1

(a) The basic unit of OOP is a class, which encapsulates both the static properties and dynamic operations within a "box". Design **ONE (1)** box to represent an object ball with the following entities:

(i) At least **TWO (2)** variables
(ii) At least **TWO (2)** methods

(5 marks)

(b) For the program below, please write:

(i) Variable declaration for sum
(ii) The formula to add variable `number1` and `number2`
(iii) Method to display the sum of `number1` and `number2`

```
public class Addition
{
      public static void main( String args[] )
   {

      Scanner input = new Scanner( System.in );

      int number1;
      int number2;
      (i)
      System.out.print( "Enter first integer: " ); // prompt
      number1 = input.nextInt(); // read first number from user

      System.out.print( "Enter second integer: " ); // prompt
      number2 = input.nextInt(); // read second number from user
      (ii)
      (iii)

   } // end method main
} // end class Addition
```

(5 marks)

Question 2

(a) Provide suitable data types for the data values below:

(i) 'A'
(ii) 12345
(iii) true
(iv) 1234567891
(v) 12.25f

(5 marks)

(b) Explain what happens when a `break` statement is encountered inside a loop.

(3 marks)

(c) Explain what happens when a `continue` statement is encountered inside a loop.

(2 marks)

Question 3

(a) Explain the differences between instance variables and class variables.

(6 marks)

(b) Create static variables for `gear` and `speed` in the pseudocode below:

```
public class Bicycle {

    (ii)…
      …
    public Bicycle(int startSpeed, int startGear){
        gear = startGear;
       speed = startSpeed;

    }
}
```

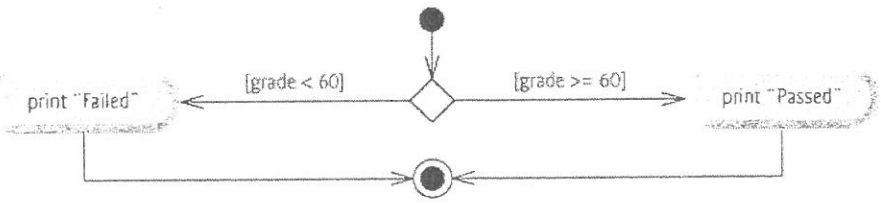
(4 marks)

Question 4

(a) Class Math provides a collection of methods that enable you to perform common mathematical calculations. List down **SIX (6)** methods of class math.

(6 marks)

(b) Based on the UML diagram below, provide the if…else statement with the display methods.



(4 marks)

SECTION B: (60%)

Question 5

(a) Create a class called `recursionTutorial` that prints out "I can do it!" **TEN** times. Your program should include class declaration, counter variable declaration, print method and counter method.

(10 marks)

(b) Declare and create a primitive array called `myArray` with **FIVE** indexes. The data in the array elements contain random numbers between 0 and 100 and must be initialized. The steps to create the array are as follows:

(i) Declare array
(ii) Create array elements
(iii) Initialize array data

(10 marks)

Question 6

(a) In Encapsulation concept, public *getter and setter* methods are used to accessed private data member. Create the *getter and setter* methods for the private variables in the program below:

```
public encapsulationTest1
{
public class EncapsulationDemo{
    private int studentID;
    private String studentName;
    private int studentSem;

    //getter and setter method here…
}
```

(10 marks)

(b) Provide the output for the program below:

```
class ArithmeticDemo {

public static void main (String[] args) {

int result = 1 + 2;
System.out.println("1 + 2 = " + result);
int original_result = result;
```

```
result = result - 1;
System.out.println(original_result + " - 1 = " + result);
original_result = result;

result = result * 2;
System.out.println(original_result + " * 2 = " + result);
original_result = result;

result = result / 2;
System.out.println(original_result + " / 2 = " + result);
original_result = result;

result = result + 8;
System.out.println(original_result + " + 8 = " + result);
original_result = result;

result = result % 7;
System.out.println(original_result + " % 7 = " + result);
}
}
```

(10 marks)

Question 7

(a) A class that is declared as abstract is known as abstract class. Given an abstract class Greeting, write a subclass of Greeting called `implementSayHello` and implement the method `sayHello()` that prints "Hello everybody!". The class is represented as below:

```
abstract class Greeting
{
abstract void sayHello();
}
```

(10 marks)

(b) Based on the code fragment below:

```
public static void main(String[] args) {
  {
   // for statement header includes initialization,
   // loop-continuation condition and increment
   for ( int counter = 1; counter <= 10; counter++ )
      System.out.printf( "%d  ", counter );

   System.out.println(); // output a newline
} // end main

} // end method main
```

(i) Produce the program outputs.

(ii) Rewrite the program in using `while` loop.

(10 marks)

~The End~

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