Zambia Centre for Accountancy Studies

NCC Diploma in Computing – Level 4

DDOOCP – Java

September 13, 2013

Test 1

Duration: 2 hours

You are required to answer all questions. Each question carries **10 marks.**

1.0 Which of the following variable names are allowed in Java, and which have the correct style?

theValue	**AREA**	**SizeType**	**testcases**
Integer	**getName**	**double**	
Go there	**setName**	**2013**	

		Marks
a)	Allowed variables	5
b)	Correct style	5

2.0

		Marks
a)	"Java is a strongly typed language". What does that imply?	2
b)	"Java is a blocked structured programming language". What does that entail?	2
c)	"Java is an object-oriented programming language". What does that mean?	2
d)	What are primitive data types in Java?	2
e)	Provide two examples of primitive data types in Java	2

3.0 What is the value of **n** after the following sequence of statements?

```
int n = 2;
n*=1000;
n+=12;
n++;
n %= 100;
```

		Marks
a)	int n = 2;	2
b)	n*=1000;	2
c)	n+=12;	2
d)	n++	2
e)	n%=100;	2

4.0 Write Java statements for the following:

		Marks
a)	A string variable with name stringVariable and value ‘I am a string’	2
b)	An integer variable with name ‘theInteger’ and value ‘2013’	2
c)	A double variable with name ‘theDouble’ and value ‘400.50’	2
d)	A boolean variable with name ‘theBoolean’ and value ‘true’	2
e)	A character variable with name ‘theCharacter’ and value ‘a’	2

5.0 What is the output of running the following statements:

		Marks
a)	System.out.println("This is a test");	2

b)	System.out.println(2-1*3+4%5+5);	2
c)	System.out.println(true&&false||true&&false||true);	2
d)	System.out.println("Munthu was born in " + 4 + 3 + " items");	2
e)	System.out.println((double)1/2);	2

6.0

		Marks
a)	What is an Array?	2
b)	Write a Java statement that will create an array to hold five integers	2
c)	Write a Java statement that will assign a value of 5 to the first element of the array in b)	2
d)	Write a Java statement that could be used to compute the size of the array in b)	2
e)	Write a Java statement that could be used to access the last element of any Java array	2

7.0 Consider the following program code:

```
package l4.ncc.ddoocp.test1;

public class Problem2 {

	public static void main(String[] args) {

		try {
			System.out.println(1/0);
		}
		catch(ArithmeticException ae) {
			System.out.println("Sorry! Error occurred –ZERO denominator");
		}
		finally {
```

```
                System.out.println("Oho!");
            }
        }
}
```

		Marks
a)	What is an Exception?	2
b)	What is the purpose of the ‘try’, ‘catch’ and ‘finally’ blocks?	4
c)	What is the output after running the program above?	4

8.0 Consider the following program code:

```
public class Problem1 {

        public static void main(String[] args) {

                System.out.println(niZeeMethod("zcas"));
        }

        public static String niZeeMethod(String inputString) {

                String resultString = "";
                int inputStringLength = inputString.length();

                for (int i=1; i<=inputStringLength; i++) {
                        resultString += inputString.charAt(inputStringLength-i);
                }

                return resultString;
        }

}
```

NOTE: The charAt method is defined in the intantiable ‘String’ class and basically returns the character at the specified position of a given string, e.g. “people”.charAt(0) returns the character ‘p’ and “people”.charAt(2) returns the character ‘o’.

The length() method is also defined in the instatiable 'String' class and it basically returns the length of the String; e.g. "people".length() returns the integer value 6.

		Marks
a)	What is the output after running the program?	4
b)	What is the return type of the method 'niZeeMethod'?	2
c)	How many parameters does the method 'niZeeMethod' accept?	2
d)	Why does the method 'niZeeMethod' have the 'static' modifier as part of it signature?	2

9.0 The PAYE taxation system in Zambia mandates employers to deduct tax from their employees' gross earnings as follows:

- STEP 1: Subtract statutory deductions – NAPSA; currently at 15% gross
- STEP 2: Subtract applicable tax rate, based on table below, from result after removing statutory deductions in STEP 1
- STEP 3: Return remaining amount – NET Pay

Income Tax Band	**Tax Rate (%)**
ZMK 2,000,000 and below	0%
ZMK 2,000,001 – ZMK 2, 800, 000	25%
ZMK 2,800, 001 – ZMK 5, 700, 000	30%
ZMK 5, 700, 000 and above	35%

		Marks
a)	Write code for a method that will return total deductions – NAPSA and tax. The method MUST take in an employee's gross amount as parameter	5
b)	Write code for a method that will return the NET Pay – after NAPSA and tax deductions. The method MUST take in an employee's gross amount as	5

parameter and MUST make use of the method in a) above	

10.0 A software company in Zambia that specializes in software integration is in the process of implementing a custom made student management system. One of the classes identified by programmers working on the project is the 'Student' class. Two instance variables –a String studentName and an integer studentNumber– have been identified. In addition, it has been observed that two overloaded constructors will be required as follows:

- A default constructor that initializes studentName to "Munthu" and studentNumber to 1111111111.
- An overloaded constructor that takes in two parameters –a String corresponding to the student name and an integer corresponding to the student number.

Furthermore, the following instance methods are required to be part of the class

- An access method –a getter method– for retrieving the student name

		Marks
a)	Write code for the two overloaded constructors	5
b)	Write code for the getter method	2
c)	Write a Java statement that will create a new object for student name "John Banda" with a student Id '2222222222'	2
d)	Write a Java statement that will print out the name of the student created in c)	1