



**ELIZADE UNIVERSITY, ILARA-MOKIN, ONDO
STATE**

**FACULTY OF ENGINEERING
DEPARTMENT OF ELECTRICAL AND
COMPUTER ENGINEERING**

FIRST SEMESTER EXAMINATION, 2017/2018 ACADEMIC SESSION

COURSE TITLE: JAVA Technology & Programming

COURSE CODE: ECT513

EXAMINATION DATE: 21st MARCH 2018

COURSE LECTURER: Dr. B. S. Afolabi

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HOD's SIGNATURE

TIME ALLOWED: 2½ HOURS

INSTRUCTIONS:

1. ANSWER QUESTION SIX AND ANY OTHER THREE QUESTIONS
2. SEVERE PENALTIES APPLY FOR MISCONDUCT, CHEATING, POSSESSION OF UNAUTHORIZED MATERIALS DURING EXAM.
3. YOU ARE NOT ALLOWED TO BORROW ANY WRITING MATERIALS DURING THE EXAMINATION.

Question #1

Give the type and value of each of the following Java expressions. If an expression will not compile, write Illegal under type and put an X in value. You must fill in every entry. Entries left blank will be marked incorrect.

12 marks

Expression	Type	Value
(7/2)*2.0		
(7/2.0)*2		
!(!!false && !!true)		
"1.1" + "2.2"		
1 + 2.2 + "1.1" + "a"		
Integer.parseInt("123")		

Question #2

a) Among the following code fragments, identify the ones that will not cause a compile-time error and the ones that will cause. 9 marks

- A. `int[] a = int[10];`
- B. `int[] a = new int[10];`
- C. `int[10] a = new int[10];`
- D. `int[] a = {1, 2, 3}; int b = a;`
- E. `int[] a;`
- F. `int a = {1, 2, 3};`
- G. `int[][] a = {{1, 2, 3}, {1, 2, 3}};`
- H. `int[][] a = new int[10];`
- I. `int[] a = {1, 2, 3}; int[] b = a;3.`

b) What is the difference between ArrayList and LinkedList?

3 marks

Question #3

a) Consider the following code

```
public class Cubes
{
    public static int square(int i)
    {
        return i * i * i;
    }
    public static void main(String[] args)
    {
        for (int i = 1; i <= 1000; i++)
            StdOut.println(square(i));
    }
}
```

Label each of the following statements as **True** or **False**

6 marks

- i. The code will not compile because braces in square() are not on separate lines.
- ii. The code will not compile because braces are missing in the "for loop".
- iii. The code will not compile because i is not declared in square().
- iv. The code will print only a few lines because square() rapidly increases the i used by main.
- v. The code will print the squares of the integers from 1 to 1000.
- vi. The code will print the cubes of the integers from 1 to 1000.

b) What is the output?

4 marks

```
public class EnumerateSeasons{
    enum Season{Spring,Summer,Fall,Winter}
    public static void main(String[] args){
        Season s = Season.Spring, t = Season.Winter;
```

```
System.out.println(s.name());
System.out.println(t.ordinal());
}
```

c) What is the difference between HashMap and Hashtable?

2 marks

Question #4

a) Consider the following code snippet, which is intended to examine an array of double values and print out the minimum value in the array and its location. The line numbers at left are for your convenience in referring to the code. You may assume arr[] is an array of double values that has been properly declared and initialized.

```
1      int N = arr.length;
2      double min = 0;
3      int minLocation=0;
4      for(int i = 1; i <= N; i++)
5      {
6          if( arr[i] < min )
7              min = arr[i];
8              minLocation = i;
9      }
10     System.out.print("The minimal value is arr[");
11     System.out.println(minLocation + "] = " + min);
```

Identify (in ten words or less, each) three bugs in the code that will result in either an incorrect answer being printed or a program crash.

9 marks

b) What is difference between object oriented programming language and object based programming language?

3 marks

Question #5

For the purpose of this question, assume that you are developing static methods for your own statistics library MyStats.

- Write a public static method threeEqual() for MyStats that takes three int values as arguments and returns true if all three numbers are equal, false otherwise. 4 marks
- Give the signature of a public static method median() for MyStats that is to take as an argument an array of int values and return the middle value. Do not give the code, just the signature (a single line of code). 2 marks
- Give a single Java expression that a client of MyStats could use to test whether the medians of three arrays of int values int[] a, int[] b, and int[] c are all equal. 2 marks
- What is a static variable? 4 marks

Question #6

a) What are the values of i, a, and b after the following code fragment runs? (6 marks)

```
int i;
int a=1;
int b=0;
for(i=0;i<10;i++){
    a = a * 2;
    b++;
}
```

b) What three lines will the following code print out when compiled and run? (6 marks)

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

```

        int[] a = new int[] {1,2,3,4};
        int b = 5;
        int c =6;
        Fold.mutilate( a , b, c);
        System.out.println( a[0]);
        System.out.println( b);
        System.out.println( c );
    }
}
class Fold{
    static void mutilate( int[] a, int b , int c) {
        a[0] = 7;
        b = 8;
        c = 9;
    }
}

```

- c) What does the class Test below print out if it is compiled and run? (6 marks)

```

public class Test
{
    int x;
    Test(String s){
        this();
        System.out.println(s);
        System.out.println("This");
    }
    Test(int x){
        this("is");
    }
    Test(){
        System.out.println("a test.");
    }
    public static void main(String[] args)
    {
        int val = 2;
        Test t = new Test(val);
    }
}

```

- d) What will be the output of this programme

(12 marks)

```

class A {
    String a1 = ABC.echo(" 1: a1");
    String a2 = ABC.echo(" 2: a2");
    public A() {ABC.echo(" 3: A()");}
}

class B extends A {
    String b1 = ABC.echo(" 4: b1");
    String b2;
    public B() {
        ABC.echo(" 5: B()");
        b1 = ABC.echo(" 6: b1 reset");
        a2 = ABC.echo(" 7: a2 reset");
    }
}

```

```
}
```

```
class C extends B {  
    String c1;  
    { c1 = ABC.echo(" 8: c1"); }  
    String c2;  
    String c3 = ABC.echo(" 9: c3");  
  
    public C() {  
        ABC.echo("10: C()");  
        c2 = ABC.echo("11: c2");  
        b2 = ABC.echo("12: b2");  
    }  
}
```

```
public class ABC {  
    static String echo(String arg) {  
        System.out.println(arg);  
        return arg;  
    }  
  
    public static void main(String[] args) {  
        new C();  
    }  
}
```