**KENYA METHODIST UNIVERSITY**

**END OF 2nd TRIMESTER 2017 (PT) EXAMINATION – PAPER 1 FULL TIME**

**FACULTY : SCIENCE AND TECHNOLOGY**

**DEPARTMENT : COMPUTER SCIENCE**

**UNIT CODE : BBIT-223/CISY 210**

**UNIT TITLE : OBJECT ORIENTED PROGRAMMING**

**TIME : 2 HOURS**

**INSTRUCTIONS: Answer all questions in Section A and two in Section B.**

**SECTION A – Question 1 30 MARKS**

1. Define the following terms: (2 marks)
   1. Type coercion
   2. Argument
2. Consider the following program to answer the questions that follow.
   1. What name will be used to save this program? (1 mark)
   2. The program has 4 errors. Identify these errors and correct them (6 marks)

1 //With errors  
 2   
 3 class Examination2  
 4 {  
 5 int length, width;  
 6   
 7 Examination2(int l, int w)  
 8 {  
 9 length = l;  
10 width = w;  
11 return l, w;  
12 }  
13   
14 public void area()  
15 {  
16 int area = length \* width;   
17 System.out.println("Area is " + area);  
18 return area;   
19 }  
20   
21   
22 }  
23   
24   
25 public class Exam  
26 {  
27 public static void main(String arg[])  
28 {  
29 Examination e = Examination(10,20);   
30 e.area();  
31 }  
32 }

1. What will the following program output? (4 marks)

1 public class TwoDArrayFT  
 2 {  
 3 public static void main(String arg[])  
 4 {  
 5 int arr[][] = new int[3][2];  
 6 int x = 3;  
 7   
 8 for(int i=0; i<3; i++)  
 9 {  
10 for(int j=0; j<2; j++)  
11 {  
12 arr[i][j] = x;  
13 x=x+2;   
14 }  
15 }  
16   
17 for(int i=1; i<3; i++)  
18 {  
19 for(int j=0; j<2; j++)  
20 {  
21 System.out.print(arr[i][j] + " ");   
22 }  
23 System.out.println();  
24 }   
25   
26 }  
27   
28   
29 }

1. Why is the main method declared as a static method? (2 marks)
2. Using an example of a method *sum()* differentiate between parameters and arguments.

(4 marks)

1. The *super* keyword has two major uses in inheritance. What are these two uses? (4 marks)
2. The following code shows an interface.

1 public interface FullTimeExam  
2 {  
3 public int catmarks();  
4 public int exammarks();  
5 public void displaymarks();  
6 }

* 1. Write only the single statement of creating a class *MyClass* that uses this interface.

(2 marks)

* 1. Assume that MyClass only defines the method catmarks(), would this be correct? Why or why not? (3 marks)

1. Using an example, explain the purpose of the *catch* segment of a try-catch block. (2 marks)

**SECTION B – ANSWER ANY TWO QUESTIONS**

**Question 2 (15 marks) – Syntax, IO, Loops and Arrays**

1. Using increment and decrement operators *only* write a Java program that outputs the following. Do not attempt to output the values directly, you must use the increment and decrement operators for you to earn marks. You do not need to use methods in this question. You can write everything in the main method. (11 marks)

I am an honest student.  
ÏÏ§ÏI do not cheat in exams  
ÏÏ§Ï10  
ÏÏ§Ï10  
ÏÏ§Ï9  
ÏÏ§Ï9  
ÏÏ§Ï24

1. Consider the following tables of values. Write only the segment of code (you do not have to write the full program) that finds and displays the highest value in column 3. (4 marks)

|  |  |  |
| --- | --- | --- |
| **2** | **3** | **4** |
| 5 | 6 | 7 |
| 8 | 9 | 10 |
| 11 | 12 | 13 |

**Question 3 (15 marks) – Classes, Methods, Inheritance**

1. Consider the following method that is supposed to return an array. The method has 3 errors. Identity these errors and indicate how to correct them. (6 marks)

5 public static double values()  
 6 {  
 7 double arr[] = [6.7, 6.3, 2.4, 5.8];  
 8 for(int i = 0; i<arr.length; i++)  
 9 System.out.println(arr[i]);  
10 return arr[];   
11 }

1. Assume that the following is the main method that creates an object for a class, MyClass. Write the constructor for MyClass indicating initialized instance variables. (4 marks)

public static void main(String arg[])  
 {  
 MyClass mc = new MyClass(30,40);  
 mc.sum();   
 }

1. Using a method *sum()* as an example, differentiate between method overloading and method overriding. (5 marks)

**Question 4 (15 marks) – Abstract Classes, Interfaces, Exception Handling**

1. Indicate whether the following statements are true or false regarding abstract classes:
   1. An abstract method can be private.
   2. If the child class does not give full definitions to all the abstract methods from the parent class, or if it adds other abstract methods, then it must also be defined as abstract.
   3. An abstract class cannot be inherited. (3 marks)
2. Write the interface that is implemented by the following program: (4 marks)
3. 1 public class ThisClass implements FullTimeInterface  
    2 {  
    3 int myAge;  
    4 String myName;   
    5   
    6 public int age(int years)  
    7 {  
    8 myAge = years + 10;  
    9 return myAge;  
   10 }  
   11 public String name(String n)  
   12 {   
   13 myName = n;  
   14 return myName;  
   15 }  
   16 public void display()  
   17 {  
   18 System.out.println("Older me " + myAge);  
   19 System.out.println(myName);  
   20 }  
   21   
   22   
   23 public static void main(String arg[])  
   24 {  
   25 ThisClass t = new ThisClass();  
   26 t.age(24);  
   27 t.name("Java");  
   28 t.display();   
   29 }  
   30 }
4. What is the output of the program in ii) above? (2 marks)
5. Why is it important to include a segment of code in a try-catch block? (2 marks)
6. A *try* block can be followed by multiple catch blocks. Write the syntax for four catch blocks. (4 marks)