KENYA METHODIST UNIVERSITY
SCHOOL BASED END OF TRIMESTER EXAMINATION APRIL 2009

FACULTY	**:**	**SCIENCES**
DEPARTMENT	**:**	**COMPUTER INFORMATION SYSTEMS**
COURSE CODE	**:**	**CISY111**
COURSE TITLE	**:**	**OBJECT ORIENTED PROGRAMMING**

Total Marks (60)

TIME: 2 HOURS

Instructions

Answer ALL questions in section A, and ANY TWO questions in section B.

SECTION A – Answer all questions (30 marks)

QUESTION 1 – 30 marks

1. Define the following terms
   a. Class
   b. Method overriding
   c. Exception. (2 marks)
2. Differentiate between an argument and a parameter. (4 marks)
3. What is the importance of method overriding? (4 marks)
4. Give two uses of the keyword **super** in inheritance. (2 marks)
5. Describe the two ways in which JAVA creates a **Thread.** (4 marks)
6. Write three Java statements that add a variable x to 1. (3 marks)
7. Describe the following JAVA buzzwords:
   a. Robust
   b. Architecture-neutral (4 marks)
8. Write a recursive program that computes the factorial of numbers 1-8. (7 marks)

SECTION B – Answer ANY TWO questions (30 marks)

Question 2 – 15 marks

a. Identify and correct the errors in each of the following statement: (2 marks)

```
a. if (c < 7 );
       System.out.println( "c is less than 7" );
```

b. What is wrong with the following `while` statement? (2 marks)

```
while ( z >= 0 )
sum += z;
```

c. Write a complete Java application to prompt the user for the `double` radius of a sphere, and call method `sphereVolume` to calculate and display the volume of the sphere. Use the following statement to calculate the volume: (11 marks)

```
double volume = ( 4.0 / 3.0 ) * Math.PI * Math.pow( radius, 3 )
```

Question 3 – 15 marks

a. Name and explain the three object oriented principles. (6 marks)

b. Perform the following tasks for an array called `fractions`: (5 marks)

i. Declare an array with `ARRAY_SIZE` elements of type `double`, and initialize the elements to `0`.
ii. Assign the value `1.667` to array element 9.
iii. Assign the value `3.333` to the seventh element of the array.
iv. Sum all the elements of the array, using a `for` statement. Declare the integer variable `x` as a control variable for the loop.

c. State whether each of the following is true or false. If a statement is false, explain why. (4 marks)

i. Superclass constructors are not inherited by subclasses.
ii. When a subclass redefines a superclass method by using the same signature, the subclass is said to overload that superclass method.

Question 4 – 15 marks

a. A palindrome is a number or a text phrase that reads the same backwards as forward. For example, each of the following five-digit integers are palindromes:12321, 55555, 45554 and 11611. Write an application that reads in a five-digit integer and determines whether or not it is a palindrome. If the number is not five digits long, display an error message indicating the problem to the user and then allows the user to enter a new value. (15 marks)