Kasarani Campus

Off Thika Road
Tel. 2042692 / 3

P.

O. Box 49274, 00100

NAIROBI

Westlands Campus
Pamstech House
Woodvale Grove
Tel. 4442212
Fax: 4444175

KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2023/2024 ACADEMIC YEAR
SECOND/THIRD YEAR, FIRST/SECOND SEMESTER EXAMINATION
FOR THE BACHELOR OF SCIENCE IN COMPUTER SCIENCE
KCS 200- OBJECT ORIENTED PROGRAMMING II

Date: 08TH AUGUST 2023
Time: 11:30AM – 1:30PM

INSTRUCTIONS TO CANDIDATES
ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

a) Define the following terms:
   i) Object
   ii) Class
   iii) Object oriented programming. (6 Marks)

b) With the aid of a diagram, distinguish between base class and derived class as applied in object oriented programming. (4 Marks)

c) State 4 advantages of using modules in program development. (4 Marks)

d) Java provides a robust and object oriented way to handle exception scenarios. What is an exception? Write a simple java program to demonstrate handling of arithmetic exception using try and catch mechanism. (6 Marks)

e) Explain the following terms employed in java program.
   i) Comments
   ii) Reserved words
   iii) Modifiers (6 Marks)

f) Explain the difference between primitive and non-primitive data types. (4 Marks)

QUESTION TWO (20 MARKS)

a) Using a suitable example, explain the relationship between superclass and subclass as used in implementing the concept of inheritance in object oriented programming. (10 Marks)

b) Differentiate between the following as used in object oriented programming
   i) Overriding and overloading (4 Marks)
   ii) Super class and sub class (4 Marks)

c) State a single characteristic that identifies an overloaded method? (2 Marks)

QUESTIONS THREE (20 MARKS)

a) Define array as used in java programming. (2 Marks)

b) Explain how you declare an array in java. (4 Marks)

c) Shown below is a program that utilizes an array. Interpret it. (8 Marks)

```
public class MarksArray {

    public static void main(String[] args) {
        int [] marks = {16, 22, 77, 40, 75};

        for (int i = 0; i < marks.length; i++){
            System.out.println(marks[i] + " ");
        }

        int total = 0;
        for (int i = 0; i < marks.length; i++){
            total += marks[i];
        }

        System.out.println("Total is " + total);

        int max = marks[0];
        for (int i = 0; i < marks.length; i++){
            if (marks[i] > max) max = marks[i] ;
        }
        System.out.println("Max is " + max);

    }
}
```

d) Write a Java program to output integers 5,10,15,20,25,30,35,40,45,50 using for loop control structure. (6 Marks)

QUESTION FOUR (20 MARKS)

a) Briefly describe the following collections as used in java collections class.

i) Lists

ii) Stacks

iii) Queue (6 Marks)

b) Explain the function of the following methods used with array Lists in java.

i) add (int index, E element)

ii) get (int index)

iii) remove (int index) (6 Marks)

c) Write a Java program that implements a class named ***NumType*** with a data member named ***value*** and method named ***read*** that accepts an integer from the keyboard. The program determines whether the integer is odd or even and displays an appropriate message. Use the if statement. (8 Marks)

QUESTION FIVE (20 MARKS)

a) Describe the following terms as used in Graphical User Interface in Java. (10 Marks)

i) Events

ii) Listeners.

iii) Event handlers

iv) Event-driven programming.

v) Exception Objects.

b) Study the following Java program segment and answer the questions that follow.

```
public class Student {
  name;
  int age;
  String gender;
  double IdNo;
  public Student(String name) {
     this.name = name;
  }
  public void studAge(int studAge){
     age = studAge;
  }
  public void studGender(String studGender){
     gender = studGender;
  }
  public void studId(double ){
     IdNo = studId;
  }
  public void printStudent(){
     System.out.println ("Name: " + name);
     System.out.println ("Age: " + age);
     System.out.println ("Gender: " + gender);
    System.out.println ("Id Number: " + IdNo);
  }
}
```

i) Explain two access modifiers used in the program segment. (4 Marks)

ii) Identify the constructor method (2 Marks)

iii) Identify any two class methods in the segment. (2 Marks)

iv) Identify two errors in the program. (2 Marks)