MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

P.O. Box 972-60200 – Meru-Kenya.
Tel: +254(0) 799 529 958, +254(0) 799 529 959, +254 (0)712 524 293
Website: www.must.ac.ke Email: info@mucst.ac.ke

UNIVERSITY EXAMINATIONS 2023/2024

SECOND YEAR, FIRST SEMESTER EXAMINATION FOR DIPLOMA IN INFORMATION TECHNOLOGY AND CERTIFICATE IN INFORMATION TECHNOLOGY
AND
FIRST YEAR, SECOND SEMESTER EXAMINATION FOR DIPLOMA IN INFORMATION TECHNOLOGY

CIT 1302/ CIT 2212: OBJECT ORIENTED PROGRAMMING

DATE: DECEMBER 2024   TIME: 1½ HOURS

INSTRUCTIONS: Answer Question ONE and any other TWO questions.

QUESTION ONE (30 MARKS)

a) Briefly describe the following concepts   (5 Marks)

   i.   Object

   ii.   Class

  iii.   Polymorphism

  iv.   Inheritance

   v.   Array

b) The for loop enables a segment of a program to execute repeatedly. Implement repetition using a simple for loop   (5 Marks)

c) The concept of object-oriented programming revolves around classes and Instances.

Using an example, demonstrate a simple class and how its instance has been created

(5 Marks)

d) The concept of shared attribute and behaviours enables a programmer to create derived classes using an example, demonstrate this concept (5 Marks)

e) 22, 30, 21, 50, 49, 2, and 12 are the number of new infections for 7 counties. Using an array, number of infections for that day (5 Marks)

f) A number can be multiplied by itself once in a square mathematical operation. The power function enables a programmer to do this at higher magnitudes. Using an example, demonstrate how you would compute 2 to power 5. (5 Marks)

QUESTION TWO (15 MARKS)

a) Explain the following concepts of object-oriented programming (5 Marks)
  i.   The continue keyword
  ii. The break keyword
  iii. The difference between the while () and do... While () loops
  iv. Method call
  v.   Debugging

b) Programming languages contain predefined classes. The list<T> class allows the programmer to declare an object that can hold a collection of elements of the same type

   Demonstrate how to: (5 Marks)
  i.   Create a list object to hold elements of type string
  ii. Add an element to the list
  iii. Remove an element from the list
  iv. Obtain the index position of a given element in the list

c) Comments are essential in programming languages. Demonstrate how you would use comments on any 5 programming statements of your choice (5 Marks)

QUESTION THREE (15 MARKS)

a) Using your programming skills, demonstrate the following   (5 Marks)

    i.   Declare a class called rectangle

    ii.   Declare the constructor for this class

    iii.   Declare a destructor for this class

    iv.   Declare the fields length and width of type

b) Write a function that displays the sum of two numbers   (5 Marks)

c) Arrays and lists enable the programmer to create objects to hold a collection of elements. Demonstrate how you can add elements to each using programming statements

(5 Marks)

QUESTION FOUR (15 MARKS)

a) In object-oriented programming, a class can take up behaviour from another class. Using an example, demonstrate a simple class and how its child can be created   (5 Marks)

b) Objects be reused depending on context. This allows the same object to serve a totally different purpose in the same program. Using programming statements, demonstrate how the operand '+' can be reused for different purposes in the same program   (5 Marks)

c) A function can share a name of another function. Demonstrate this using programming statements   (5 Marks)