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**KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**UNIVERSITY EXAMINATION, 2024/2025 ACADEMIC YEAR**  
**FIRST YEAR, SECOND SEMESTER EXAMINATION**  
**FOR THE DIPLOMA IN BUSINESS & INFORMATION TECHNOLOGY**  
**DIT 1006 OBJECT ORIENTED PROGRAMMING**

Date: 9<sup>TH</sup> AUGUST 2024  
Time: 8:30AM – 10:30AM

**INSTRUCTIONS TO CANDIDATES**

**ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS**

**QUESTION ONE (30 MARKS)**

- a) Comments are used for explanatory purpose in programming. By use of examples, explain two ways of using comments in C++ (4 Marks)
- b) Highlight object-oriented programming languages rather than C++ (4 Marks)
- c) A programming paradigm is a fundamental style of computer programming, a way of building the structure and elements of computer programs. Explain the main programming paradigms (5 Marks)
- d) The following program contains various errors. Identify the errors and state the appropriate corrections to be made (5 Marks)

```
#include <iostream>
using namespace std;
main()
nt myAge = 23;
cout << "I am " << myAge << " years old."
return ;
}
```

- e) Create a simple C++ program that demonstrate inheritance with the base class, Vehicle and derived class, Car with attributes model Year, model (6 Marks)
- f) State reasons why programmers might decide to use C++ over other programming languages (6 Marks)

**QUESTION TWO (20 MARKS)**

- a) Write a simple C++ program to output "Jambo Kenya!" (5 Marks)
- b) Explain the program above step by step (5 Marks)
- c) Write a C++ program that demonstrates introduction of a new line by use of an escape sequence (10 Marks)

### **QUESTION THREE (20 MARKS)**

- a) In the process of creating a software various data types are used:
  - i. Explain the different data types (5 Marks)
  - ii. Demonstrate how to declare and give example of each (5 Marks)
- b) A high school student is unable to calculate the area of a circle:
  - i. Create a program that allows the student to enter floating point radius (5 Marks)
  - ii. Calculates the area of the circle and displays it (5 Marks)

### **QUESTION FOUR (20 MARKS)**

- a) Inheritance is the mechanism which allow a class A to inherit properties of a class B. Distinguish the two categories of inheritance concept in C++ (4 Marks)
- b) Describe the different operators used to perform operations on variables and values by use of examples (8 Marks)
- c) Create a simple calculator that allows user to input two integer numbers and prints the sum of the two numbers (8 Marks)

### **QUESTION FIVE (20 MARKS)**

- a) Polymorphism means "many forms", and it occurs when we have many classes that are related to each other by inheritance. Identify and discuss the two types of polymorphism (4 Marks)
- b) Distinguish between constructors and destructors (4 Marks)
- c) Access specifiers define how the members (attributes and methods) of a class can be accessed. Explain the three-access specifier used in C++ (6 Marks)
- d) Stream is not a hardware it is linear queue which connect file to program and passes block of data in both directions. Describe the classes included in the fstream library (6 Marks)