

Murang'a University College End of Semester Exams

School of Commerce and Economics

Bachelor of Business Information Technology (BBIT)

Exam ICS2104: OBJECT ORIENTED PROGRAMMING 1

Date December 2013 *Answer question one and any other two questions* Time; 2 Hours

QUESTION ONE

a) Study the following C++ program and write a hypothetical output. 6 marks

```
// Example usage of the do ... while loop
#include <iostream>
using namespace std;

int main()
{
    int counter;

    cout << "How many hellos? ";
    cin >> counter;

    do {
        cout << "Hello\n";
        counter--;
    } while(counter > 0);

    cout << "counter is " << counter << endl;
    return 0;
}
```

b) With respect to OOP, describe how the following terms are used while developing software.

- i) Class 2mks
- ii) Encapsulation 2mks
- iii) Inheritance 2mks
- iv) Data Abstraction 2mks

c) Differentiate between operator overloading and function overloading in a C++ program
4 marks

d) Use the CPolygon base class to write a section of a C++ program to demonstrate how the CRectangle and the CTriangle derived classes can inherit width and height from the CPolygon parent class and also calculate their area.
6 marks

e) By use of **one none** programming based example and **one** C++ programming based example, describe the concept of Polymorphism.
3 marks

f) Describe the benefit of using Dummy data while performing functional testing of software.
3 marks

QUESTION TWO

a) Differentiate C and C++ programming languages 4marks

b) Discuss THREE relational operators 3 marks

c) Use C++ to develop a program which uses an array of ten elements, assigns each element a value. It then computes the average of those values and finds the minimum and the maximum value.
13 marks

QUESTION THREE

a) Compare cin and cout streams as used in C++ programming. 4 marks

b) Justify the need of virtual functions while developing software in C++. 6 marks

c) Develop a C++ program which uses a function to add two integers. 10 marks

QUESTION FOUR

a) Using the correct syntax, differentiate the following forms of C++ inheritance. 8 marks

i) Single Inheritance

ii) Multilevel Inheritance

b) List FOUR advantages of Inheritance in software development. 4 marks

c) Develop a C++ program that prints sum, difference, product and remainder of two integers.
8 marks

QUESTION FIVE

a) With relevant examples, describe THREE types of errors in C++. 9 marks

b) By use of passing arguments by reference, develop a C++ program which uses a function that returns the previous and next numbers of the first parameter passed. 11 marks