



THE TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY
DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY
(DICT M12 S-EV)

ECS 2105: OBJECT ORIENTED PROGRAMMING

END OF SEMESTER EXAMINATION

SERIES: APRIL 2013

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*
- *Code provided or to be created MUST adhere to the syntax & semantic of C++ Programming language.*
- *Keep your answers as neat and clear as possible*

This paper consists of **FIVE** questions. Attempt question **ONE** and any other **TWO** questions
Maximum marks for each part of a question are as shown

This paper consists of **THREE** printed pages

Question One (Compulsory)

- a) Clearly define the meaning of the following terms: **(4 marks)**
- (i) Member function
 - (ii) Derived class
 - (iii) Message passing
 - (iv) Operator overloading
- b) Write a C++ program which calculates the sum of all even numbers between 0 and 10. **(4 marks)**
- c) What is the difference between a function and procedure? Use a piece of code to support your answer. **(4 marks)**

- d) Using the code below, answer the questions that follow:

```
#include <iostream>
Using namespace std;
Int sum (int, int);
Int main()
{
    Int x = 100; int y = 200;
    Cont<<"sum of Numbers: "sum (x,y)<<ende:
    Return 0
}
Int sum (int a, ant b)
{
    Return a + b;
}
```

- (i) Identify any ONE error in the program **(1 mark)**
 - (ii) What parameter passing mechanism is used in this program? Explain how this is achieved in relevance to the information provided in the program. **(3 marks)**
 - (iii) What is the use of line one: #include <iostream> **(1 mark)**
- e) What are the characteristics of a constructor **(3 marks)**

Question Two

- a) Using a piece of code, explain the meaning of function overloading. **(3 marks)**
- b) Explain any **THREE** logical operators used in C++ **(3 marks)**
- c) Give the syntax for member function definition outside class. **(3 marks)**
- d) Briefly explain the **THREE** types of inheritance. Use a piece of code to illustrate your answer. **(6 marks)**
- e) State and briefly explain any **FOUR** applications of inheritance. **(4 marks)**
- f) What is encapsulation **(1 mark)**

Question Three

- a) What is polymorphism? How is polymorphism concept achieved in C++ programming language? (3 marks)
- b) What is the difference between inline and a friend function (2 marks)
- c) Write a C++ code stub to demonstrate the general class structure. (3 marks)
- d) Briefly state and explain any **TWO** parameters passing mechanisms used in C++ (4 marks)
- e) Differentiate between default constructor and parameterized constructor. (2 marks)
- f) Define a variable (1 mark)
- g) What can a derived class NOT inherit from the base class (2 marks)
- h) Using a C++ code stub, explain the concept of function prototype. (3 marks)

Question Four

- a) Differentiate between dynamic data building and dynamic object initialization.(4 marks)
- b) Write a C++ program with one function which takes in one integer parameter. If the parameter is less than 0, it should print your surname, otherwise if the parameter is less than 1, it should print your middle name else it prints your last name. (6 marks)
- c) Using a C++ program, differentiate global and local variables. Hint: Use comments to show the difference. (4 marks)
- d) Name and briefly explain any **THREE** access specifies. (6 marks)

Question Five

- a) Write a C++ program to show your understanding of multiple inheritance. (9 marks)
- b) What is an in line function? (2 marks)
- c) (i) List any **FOUR** operators in C++ (2 marks)
(ii) Explain the term inheritance as used in OOP (2 marks)
- d) List down any **THREE** benefits OOP (3 marks)
- e) Differentiate between a constructor and a destructor. (2 marks)