# THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

**(A Constituent College of JKUAT)**
*Faculty of Engineering and Technology*

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

## *Institutional Based Program*

### BACHELOR OF ENGINEERING IN BUILDING & CIVIL ENGINEERING

EIT 4108: FUNDAMENTALS OF OBJECT ORIENTED PROGRAMMING

**END OF SEMESTER EXAMINATION**

SERIES:  APRIL 2012
**TIME:  2 HOURS**

**Instructions to Candidates:**
You should have the following for this examination
- *Answer Booklet*

This paper consists of **FIVE** questions in **TWO** sections **I & II**
Answer question **ONE (Compulsory)** and any other **TWO** questions
Maximum marks for each part of a question are clearly shown
This paper consists of **THREE** printed pages

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**SECTION I (Compulsory)**

**Question 1 (30 marks)**

a)  Explain the following types of errors that can occur in program:

  i.   Syntax error.
  ii.  Logical error.
  iii. Run time error.                                                        **[6 marks]**
b)  (i)  Explain what is mean by 'comment' as applied to programming.         **[2 marks]**
  ii)  Explain with an example how comment is inserted in a C++  program.     **[1 mark]**
c)  Explain the term 'header file' as applied to C ++ programming. Write C++ statement containing
  a header file.                                                             **[3 marks]**

d)  Explain the following object oriented paradigms:
  i.   Inheritance
  ii.  Polymorphism

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    iii.    Encapsulation     **[4 marks]**

e)    State any **FOUR** primary mathematical operators used in C++, giving an example of each.

        **[4 marks]**

f)    State any **FOUR** data types used in C++.     **[4 marks]**

g)    Explain what is meant by 'typecast' in Object Oriented Programming     **[2 marks]**

h)    Explain what is meant by 'Overloaded' operator. Give an example.     **[2 marks]**

## SECTION II (Attempt any TWO questions)

## Question 2 (20 marks)

a)  State **TWO** advantages of program documentation.     **[2marks]**
b)  Draw a program flowchart to calculate the sum of even numbers from 1 to 100     **[8 Marks]**

c)  Design a program to read 10 numbers calculate their sum and display their average**.**     **[10 Marks]**

## Question 3 (20 marks)

a)  Write a simple C++ program to find the factorial of any given number     **[14 Marks]**

b)  Explain any three disadvantages of machine programming language.     **[6 marks]**

## Question 4 (20 marks)

a)  Explain the necessity of student in civil engineering learning computer programming   **[4 marks]**

b)  Write a C++ program that prompts the user to enter two integers then return the greatest integer using at least one function.     **[10 marks]**

c)  Explain dynamic cast as used in Object Oriented Programming.     **[3 marks]**

**d)**  List any **THREE** guidelines in Naming variables     **[3 mark]**

## Question 5 (20 marks)

**a)**  In a certain school students sit for three exams. The average marks of three exams are calculated and the students are given grades. The grading system is shown below:

| Average Mark | Grade |
|---|---|
| 0 – 39 | F |

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| | |
|---|---|
| 40 – 60 | C |
| 60 – 75 | B |
| 75 – 100 | A |

    i)      Develop a pseudo code for the Q2 A above **[6 marks]**
    **ii)**     Write a C++ program to read marks, calculate the average of a student and output the grade of a student. **[10 marks]**

b)  Describe any two advantages of using a high level programming language **[4 marks]**