



TECHNICAL UNIVERISTY OF MOMBASA

# Faculty of Engineering & Technology

UNIVERSITY EXAMINATION FOR:  
BACHELOR OF TECHNOLOGY IN INFORMATION TECHNOLOGY  
(BTIT 13S – Y1 S2)

**EIT 4108: FUNDAMENTALS OF OBJECT ORIENTED PROGRAMMING**

END OF SEMESTER EXAMINATION

**SERIES: APRIL 2014**

**TIME: 2 HOURS**

**Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions.

Attempt question **ONE (COMPULSORY)** and any other **TWO** questions

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

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**Question One (Compulsory)**

- a) Create new classes for each real-world object that you observed write method and instances for the class and associated object to the class. **(5 marks)**
- b) Explain the differences between abstraction and encapsulation. **(5 marks)**
- c) What role(s) does abstraction play in object oriented programming? **(5 marks)**
- d) Write a program in C++ to simulate the functionality of a simple calculator for addition, subtraction, division and multiplication. **(5 marks)**
- e) Give the general syntax for a class definition. **(2 marks)**
- f) Distinguish between the two terms a class method and instance method. **(2 marks)**
- g) Explain **THREE** reasons why it is useful to be able to inherit characteristics from parent classes. **(6 marks)**

h) State THREE objectives of (I/O) management. (3 marks)

### Question Two

- a) Explain THREE key stages of the software development life cycle involving the user directly. (6 marks)
- b) Explain how the quality of design affects the software maintenance cost. (4 marks)
- c) Develop a class that calculates the volume of a square rectangle and a triangle. (10 marks)

### Question Three

- a) Briefly explain the following terms:
- (i) Destructor
  - (ii) Constructor
  - (iii) Operator overloading (6 marks)
- b) Draw a program flow chart to evaluate three different inputs as zero, positive or negative value. (6 marks)
- c) Develop a program for the above flowchart in Q (b) (8 marks)

### Question Four

- a) State FOUR advantages of program documentation. (4 marks)
- b) Using table and classes, explain subclass and super class. (4 marks)
- c) Develop a program to evaluate the largest number among three integers. (6 marks)
- d) Explain THREE advantages of using polymorphism in an object-oriented program. (6 marks)

### Question Five

- a) Explain the relation between a class and an object using suitable example. (4 marks)
- b) Outline FOUR benefits of object oriented programming over other programming. (4 marks)
- c) Model different types of houses, using inheritance. Include:
- (i) House
  - (ii) Plot
  - (iii) Bungalow
  - (iv) Apartment
  - (v) Bedsitter
  - (vi) Swahili house; and
  - (vii) Hostel (6 marks)
- d) List THREE guidelines in Naming Variables. (3 marks)
- e) Develop a program of an object account with an instance methods deposit and withdraw. (3 marks)