



# Technical University of Mombasa

Faculty of Applied and Health Sciences

**DEPARTMENT OF PURE AND APPLIED SCIENCES**  
UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF  
SCIENCE IN MATHEMATICS AND COMPUTER SCIENCE

## **ICS 2102: INTRODUCTION TO COMPUTER PROGRAMMING**

SPECIAL/SUPPLEMENTARY EXAMINATION

FEBRUARY 2013 SERIES

2

HOURS

Instructions to candidates:

This paper consist of **FIVE** questions

Answer question **ONE** (compulsory) and any other **TWO** questions

### **Question ONE**

- a) What is a programming language? Mention and briefly elaborate the **FOUR** characteristics often considered important for constituting a programming language

**(8marks)**

- b) List and explain at least **EIGHT** quality requirements of a good program. **(16marks)**

- c) Differentiate between the following terms **(6marks)**

- (i) Syntax and semantics
- (ii) Interpreter and compiler
- (iii) Top down design and bottom up design

### **Question TWO**

A company executive is paid a rate of 2000Ksh for the use of his car as allowances per day for mileage. At the end of each week, the executive enters to a computer program his mileage per week. The program calculates then displays the mileage and travelling allowance that the executive is entitled to receive.

- a) Determine the input and the output of the program **(3marks)**
- b) Determine the formula for getting the allowances **(3marks)**
- c) Write an algorithm for the program using
  - (i) Flowcharts **(7marks)**
  - (ii) Pseudo code **(7marks)**

### Question THREE

- a) Define modular programming? Discuss some of the advantages of using modules in programming **(10marks)**
- b) Mention at least **SIX** programming languages common in the market today. **(6marks)**
- c) List the **FOUR** properties of an algorithm **(4marks)**

### Question FOUR

- a) What is a data type? With relevant examples of each, clearly elaborate on the **FOUR** data types in programming **(8marks)**
- b) Draw the shapes used in a flow chart and explain what they do **(12marks)**

### Question FIVE

- a) Write a short program code in C++ using while loop that will display 4,3,2,1 on the screen. **(7marks)**
- b) State and explain the roles of a function in the program code **(6marks)**
- c) What will program code below display on the screen and what is the purpose of using i++ in this code **(5marks)**

```
int;  
For (I =0, i<10; i++){  
System. out. print(i);  
}
```

- d) Differentiate between expression and statement **(2marks)**