



# THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

*Faculty of Engineering & Technology*

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

**BIT 2104: INTRODUCTION TO PROGRAMMING & ALGORITHMS**

SPECIAL/SUPPLEMENTARY EXAMINATION

**SERIES: MAY/JUNE 2012**

**TIME: 2 HOURS**

## **Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*

This paper consist of **FIVE** questions

Answer any **THREE** questions. Question **ONE** is Compulsory

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

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## **SECTION A (Compulsory - 30 marks)**

### **Question One (30 Marks)**

- a) Define the following:
- i) Interpreter (2 marks)
  - ii) Local variable (2 marks)
  - iii) Compiler (2 marks)
  - iv) Algorithm (2 marks)
- b) Write a code segment that implements the following in a c-program:
- i) Declare a variable to store text (3 marks)
  - ii) Input an integer into a variable called HEIGHT (3 marks)
- c) State flowchart symbols that would be used to represent the following
- i) Enter data (2 marks)
  - ii) Increment counter by 1 (2 marks)
  - iii) Link diagrams on separate pages (2 marks)
- d) Briefly discuss how to comment in a c-program. State at least FOUR uses of comments (6 marks)

- e) Enumerate **FOUR** qualities of a good program (4 marks)

**SECTION B (Answer any TWO questions – 40 Marks)**

**Question Two (20 marks)**

- a) Formulate an algorithm that exchanges integer values held in two variables called FIRST and SECOND respectively (5 marks)
- b) Represent your algorithm in question (a) above using a flow chart (5 marks)
- c) Describe **THREE** types of variables (6 marks)
- d) List any **FOUR** rules used in naming a variable (4 marks)

**Question Three (20 marks)**

- a) Draw a flowchart that:
- i) Reads and displays a set of **SIX** numbers (5 marks)
  - ii) Finds and displays the greatest common divisor (GSD) of any given two positive integers (5 marks)
- b) Describe the major stages of a Program Development Life Cycle (10 marks)

**Question Four (20 marks)**

- a) Describe **THREE** types of control structures. In each control structure, describe the different ways to implementing it (10 marks)
- b) Discuss the different generation of programming languages. In each, give an advantage and disadvantage for each of them (10 marks)

**Question Five (20 marks)**

Suppose you want to write a program to help in determining the number of books to place in a shelf. Your program requests the length of the shelf, the number of books and the thickness of each book. Your program should advise if your books will fit or not.

- i) Formulate an algorithm for your program (5 marks)
- ii) Represent your algorithm in question (i) above using a pseudo code. (5 marks)
- iii) Write a program in C that implements the algorithm in question (ii) (10 marks)