



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

(A Centre of Excellence)

Faculty of Applied & Health Sciences

DEPARTMENT OF MATHEMATICS & PHYSICS

UNIVERSITY EXAMINATION FOR:

BACHELOR OF SCIENCE IN MATHEMATICS & COMPUTER SCIENCE (Y1 S1)

ICS 2102: INTRODUCTION TO COMPUTER PROGRAMMING

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2012

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consist of **FIVE** questions

Answer 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

Question One (Compulsory)

- a) What is computer programming and list the **FOUR** tasks performed by the program. **(6 marks)**
- b) Algorithms can be represented in four different ways. Mention them. **(4 marks)**
- c) State the **FOUR** advantages of a flow chart. **(4 marks)**
- d) State and explain the **THREE** types of errors encountered in writing a computer program. **(6 marks)**
- e) Differentiate between expression and statement giving examples. **(3 marks)**

- f) Write a short program code in C++ using while loop that will display 4, 3, 2, 1 on the screen. (7 marks)

Question Two

- a) What is data type? List the **FOUR** examples of data types. (4 marks)
- b) State and explain the **THREE** limitations of top down design. (6 marks)
- c) Write a simple algorithm in C++ using do while to display 0,1,2,3,4,5,6,7,8,9 on the screen. (10 marks)

Question Three

- a) Consider the pseudo code below where a man deposits \$1000 in a bank at an interest rate of 10% per year.

```
Algorithm: Bank Interest Rate
Set Deposit to 1000
Print heading "YEAR DEPOSIT INTEREST TOTAL"
Set year to 1
Carry out the following when deposit is less than or equal to 2000
Add 1 to year
Set interest to 10% of deposit i.e. Deposit * 0.1 set total to Deposit + Interest
Print (year, deposit, interest, total)
Set Deposit to total (the new deposit for the next year)
Print ("The total first exceeds $2000 at the end of year", Year)
Stop
```

Draw the flow chart of the above pseudo code. (10 marks)

- b) What is pseudo code? And mention **FIVE** guidelines for designing a good pseudo code. (7 marks)
- c) Mention at least **THREE** programming languages common in the market today. (3 marks)

Question Four

Consider problem below for converting a given temperature in Celsius (C) into a temperature in Fahrenheit (F) using $F = 32 + 915C$

When $C = 0$ then stop

- a) Write a pseudo code using IF THEN statement. (10 marks)
- b) State **FIVE** stages that a module testing goes through. (5 marks)

Question Five

- a) List and explain at least **EIGHT** quality requirements of good program. (16 marks)
- b) What is data obstruction? And give examples of data abstraction. (4 marks)