



# THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

*Faculty of Engineering & Technology*

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

**EIT 4102: FUNDAMENTAL OF PROGRAMMING**

END OF SEMESTER EXAMINATIONS

**SERIES: DECEMBER 2011**

**TIME: 2 HOURS**

## **Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*

This paper consist of **FIVE** questions in **TWO** sections **A & B**

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

Maximum marks for each part of a question are as shown

This paper consists of **THREE** printed pages

## SECTION A (COMPULSORY)

### Question one 30 marks

- a) Explain any **two** repetition structure in Pascal Programming. [4 marks]
- b) List any **four** data type in Pascal programming. [4 marks]
- c) Explain any **two** advantages and two disadvantages of flow charts. [8 marks]
- d) Describe any **three** types of errors that can occur when Compiling Pascal program. [6 marks]
- e) Explain the following:
- i) Variable.
  - ii) Constant. [4 marks]
- f) List **four** features of a good programming language. [4 marks]

## SECTION B (ANSWER ANY TWO QUESTIONS)

### Question two 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
40 – 60	C
60 – 75	B
75 – 100	A

- i) Develop a pseudo code for the Q2 A above [3 marks]
  - ii) Write a Pascal program to read marks, calculate the average of a student and output the grade of a student. [7 marks]
- b) Describe any **two** advantages of using a high level programming languages. [4 marks]
- c) Explain using an example the use of comments in computer programs. [3 marks]
- d) List any **three** guidelines in Naming variables [3 marks]

### Question three 20 marks

- a) Develop a program that reads length and width of a rectangular plot and length and width of a house situated within the plot. The program should calculate time needed to cut the grass at a rate of 2m sq/sec [8marks]
- b) State **TWO** advantages of program documentation. [2marks]
- c) i) Draw a program flowchart to calculate the sum of numbers From 1 to 100 [4marks]

(ii) Implement the above (Q3c(i)) using Pascal Language

[6marks]

**Question four 20 marks**

a) A construction company pays its casual employees on weekly basis under the following guidelines

- Basic Salary =Hours Worked x Rate
- Net Salary=gross-tax
- If employee earns more than 3000Ksh, tax him/her 200Ksh otherwise no tax

(i) Develop a program flowchart that reads the name of an employee, hours worked and the rate of pay ,process the data and display the Name of employee ,Basic salary and Net salary [6 marks]

(ii) Implement the above Q4(a) using Pascal Language [8 marks]

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

**Question five 20 marks**

a) Explain the necessity of student in building and civil engineering learning computer programming [3 marks]

b) Develop a Pascal program to calculate the area and circumference of a circle. The program should display circumference and area, given the formula Area=  $\pi * r * r$ . Circumference=  $2 * \pi * r$  [5marks]

c) List **five** salient features of an Array [5 marks]

d) Using Arrays write a Pascal program to calculate the mean of three numbers [7 marks]