THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

(A Centre of Excellence)

Faculty of Engineering & Technology

DEPARTMENT OF MECHANICAL & AUTOMOTIVE ENGINEERING

UNIVERSITY EXAMINATION FOR DEGREE IN BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING (BSME Y2 SI)

ICS 2175: COMPUTER PROGRAMMING I (C)

END OF SEMESTER EXAMINATION
SERIES: AUGUST 2012
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 **TWO** printed pages

SECTION A (COMPULSORY)

Question One (30 Marks)

a) Declare and initialize **FOUR** stages of data in C program. **(4 marks)**

b) Outline **FOUR** applications of comments in programming. **(4 marks)**

c) Describe using diagrams, **TWO** types of control structures in C. **(4 marks)**

d) Define the term data file and show how it is created. **(3 marks)**

e) Define the following terms and show how they are created.
i) Data structure
ii) Array
iii) Pointer **(6 marks)**

f) Outline **THREE** advantages of program modulation. **(3 marks)**

g) Identify **SIX** steps used in solving computer based problems. **(6 marks)**

SECTION B (Answer Any Two Questions)

Question Two (20 marks)

a) Give the basic structures of a C program. **(5 marks)**

b) Write a C program that prompts the user for 2 numbers and gets the sum. **(5 marks)**

c) Describe the **FIVE** elements of the system development life cycle. **(10 marks)**

Question Three (20 marks)

a) Describe **THREE** types of programming languages giving **ONE** advantage and **ONE** disadvantage for each. **(6 marks)**

b) Write a C program that prompts the user for the first initial of his name and outputs the answer. **(4 marks)**

c) Write a C program to input 10 student marks in array and calculate and display:
   i) Student marks
   ii) Average grade
   iii) Highest grade
   iv) Lowest grade. (**10 marks)**

Question Four (20 marks)

a) Differentiate between external variables at internal variables. Give examples. **(4 marks)**

b) Declare and initialize **FOUR** types of variables. **(4 marks)**

c) Declare a structure variable with at least **FOUR** member elements, one of which should be an array and another pointer. **(6 marks)**

d) Write a C program that uses a function to calculate the factorial of a number. **(6 marks)**

Question Five (20 marks)

a) What is modular programming? **(2 marks)**

b) Describe the process of modular programming. **(4 marks)**

c) List **FOUR** advantages of modular programming. **(4 marks)**

Write a C program that prompts the user for his age and displays grade very old if the age is > = 100, Old if the age is greater than 60 but less than 70, middle age if the age is greater than 50 but less than 60, old if the age is greater than 40 but less than 50 and Young if the age is less than 40. **(10 marks)**