THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

Faculty of Engineering and Technology

DEPARTMENT OF MECHANICAL & AUTOMOTIVE ENGINEERING

UNIVERSITY EXAMINATIONS FOR DEGREE IN
BACHELOR OF SCIENCE IN MECHANICAL ENGINERING (BSC YR2 SEM1)

STA 2270 : COMPUTER PROGRAMMING 1 (C)

END OF SEMESTER EXAMINATIONS

SERIES: AUGUST/SEPTEMBER 2011
TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer booklet*

Answer question **ONE (COMPULSORY)** in section **A** and any other **TWO** questions from section **B**
This paper consists of **TWO** printed pages

SECTION A - COMPULSORY (30 MARKS)

Question One

a) Provide definitions for the following terms/phrase.
   (i) System program
   (ii) Application program
   (iii) Programming
   (iv) Algorithm [4 marks]

b) Outline the relationship between problem solving and computer programming [2 marks]

c) Describe all the steps of problem solving that one can do with or without the use of computers. [5 marks]

d) Problem solving algorithm

   (i) Formulate an algorithm to calculate average of three numbers [4 marks]
   (ii) Represent the algorithm above using a flow chart [3 marks]

   (iii) Write a C program to implement the formulated algorithm in d(i) above [3 marks]

e) Write a C program that uses a function to find the sum of ten students marks. Assume that the marks are stored in a one dimensional array and that the marks are for one subject. [6 marks]

f) Outline **FOUR** applications of comments in programming [3 marks]

SECTION B - COMPULSORY (40 MARKS)

Question Two [20 Marks]

a) Give the basic structure 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 **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 [7 marks]
b) Write a C program that prompts the user for the first initial of his name and outputs the result [5 marks]
c) Outline FOUR software's that the form the program development environment [8 mark]

Question Four [20 Marks]

a) Define the term variable scope [2 marks]
b) Outline with examples the difference between local variables and global variables. [6 marks]
c) Write a C program that prompts the user for TWO names and outputs the results [5 marks]
d) Declare a structure variable called simba of type DOG with at least four member elements, one of which should be an array and another a pointer [5 marks]
e) What do you understand by the term recursive function? [2 marks]

Question Five [20 Marks]

a) What is stepwise refinement? [2 marks]
b) Describe the process of stepwise refinement [4marks]
c) List **FOUR** advantages of stepwise refinement [4 marks]
d) Write a C program that prompts the user for students marks and displays grade A if marks is > = 70, B if marks greater than 60 but less than 70, , C if marks greater than 50 but less than 60, D if marks greater than 40 but less than 50 and , F if marks less than 40. [10 marks]