



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

(A Centre of Excellence)

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

**UNIVERSITY EXAMINATION FOR DEGREE IN BACHELOR OF SCIENCE IN
MECHANICAL ENGINEERING (BSC. ME)**

ICS 2175: COMPUTER PROGRAMMING

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: OCTOBER 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** 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) 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)**
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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) Programming:

- Write a C program that uses a function to find the sum of ten students marks. Assume that the marks are stored in 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 (Answer Any Two Questions)

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** softwares that forms the program development environment. **(8 marks)**

Question Four (20 marks)

a) Define the term variable scope. **(2 marks)**

b) Outline with examples the differences between local variables and global variables. **(6 marks)**

c) Write a C program that prompts the user for two names and output the result. **(5 marks)**

d) Declare a structure variable called Simba of type DOG with at least four members elements, one of which should be array and another a pointer. **(5 marks)**

e) What do you understand with the term recursive function? **(2 marks)**

Question Five (20 marks)

a) What is stepwise refinement? **(2 marks)**

b) Describe the process of stepwise refinement. **(4 marks)**

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)**

