TECHNICAL UNIVERSITY _____ OF MOMBASA

UNIVERSITY EXAMINATION FOR:

END OF SEMESTER SUPPLEMENTARY EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

DATE: APRIL 2016

Instructions to Candidates
You should have the following for this examination
-*Answer Booklet, examination pass and student ID*
This paper consists of **FIVE** questions. Attempt question **ONE** and any other **TWO** questions.
Do not write on the question paper.

Question ONE

a. Define the following terms as used in programming

   i.   Variable
  ii.   Algorithm
 iii.   Compiler   (6 Marks)

b. State the type of error in each one of the following (Runtime, syntax or logical)

   i.   Division of a number by zero
  ii.   Missing semicolon at the end of a C statement
 iii.   Loop executing indefinitely
 iv.   Use of undeclared variable
  v.   Generation of a negative value
 vi.   Data overflow   (6 Marks)

c. Declare an array called numbers and initialize it with the values:

   45, 58,63, 25, 69, 75, 55, 63, 34 and 25   (4 Marks)

d. Describe the steps in program development   (6 Marks)

e. In a Technical university of Mombasa candidates are awarded order of merit as follows:

GRADE	DEGREE CLASS
A	First Class Honors
B	Second class upper division
C	Second class Lower Division
D	Pass
E	Fail

Write a C program using the switch control structure that prompts the user on his grade choice
and prints out the specified degree class.   (8 Marks)

Question TWO

a. Give the meaning of each of the following file opening modes:

   i.   r
  ii.   w
  iii.   r+
  iv.   a
   v.   w+
  vi.   a+   (6 Marks)

b. Explain three reasons why functions are important in programming   (3 Marks)

c. Create a structure called student that contains these four elements: sname, regno,

course and average_mark and declare one variable using this structure   (4 Marks)

d. Write an array program that will store the ages of five children and then outputs the five ages
on the screen   (7 Marks)

Question THREE

a. Explain the use of the following escape sequences:

   i.   \\
  ii.   \b
  iii.   \n

iv.   \t   (4 Marks)

b. Differentiate between:

   i.   getc() and putc() fuctions
   ii.   structure and array   (4 Marks)

c. Give two advantages and disadvantages of using a flowchart in program design.   (4 Marks)

d. Using function mult() with three parameters, write a program that would multiply three intergers x,y and z and divide the result by three and return the result. The program should read the values from the keyboard.   (8 Marks)

Question FOUR

a. Outline the use of comments in a program   (4 Marks)

b. Briefly describe the following means of representing algorithms:

   i.   Flowchart
   ii.   Pheudo code   (4 Marks)

c. Outline the two problem solving strategies in C programming   (4 Marks)

d. A supermarket is planning to give discounts to its customers based on the total cost of purchases made by the customer. Discounts will be given as follows:

   i.   Total sales exceeding Kshs.5000 get a discount of 8%
   ii.   Sales greater than Kshs. 3000 and up to Kshs. 5000 get a discount of 5%
   iii. Sales greater than or equal Kshs. 1500 and up to Kshs. 3000 get a discount of 2%
   iv.   Sales amounting to less than Kshs. 1500 get no discount

Write a program that accepts the total amount of purchase and displays the discount and amount paid after the discount   (8 Marks)

Question FIVE

a. State four rules that must be followed when naming variables   (4 Marks)

b. What is a pointer variable? How can we access the elements of a one dimensional

array using a pointer variable   (4 Marks)

c. C program have components mentioned below. State the role of each, giving an example

   i.   Header file
   ii.   Input statement

iii.   Output statement   (6 Marks)

c. Write a program that utilizes a function to calculate the area of a circle. The function receives radius as an argument. Given that PI=3.142 and that $A = \pi r^2$ (8 Marks)