MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)
University Examinations for 2015/2016 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL ENGINEERING

STRUCTURED PROGRAMMING

DATE:1/8/2016   **TIME:2.00-4.00 PM**

INSTRUCTIONS

Answer question one and any other two questions

QUESTION ONE (COMPULSORY)

a) State the *differences* between the following terms.

   i)   Syntax and source code
   ii) Variable and Constant
   iii) Compiler and Interpreter
   iv) High level languages and Low level languages   (8 marks)

b) Explain the meaning of the term *data type* as used in C programming.   (2 marks)

c) Write a C program that will accept **two** values through the keyboard and calculate

   their product.   (6 marks)

d) Explain any four benefits of using functions in a program   (4 marks)

e) Explain any **three** C programming variable Formatters.   (6 marks)

f) Mary went through a C program and met the **&** sign in the scanf statement. *Explain*

   to her it's purpose.   (2 marks)

g) State the difference between the following expressions

    i.   =
    ii. = =   (2 marks)

Question Two

a) Explain the methods of *declaring* a constant.   (4 marks)

b) State the reasons why the following identifiers are *invalid*

    i.   value$sum
    ii.   exit flag
    iii. 3lotsofmoney
    iv. Char   (4 marks)

c) Write a C Program that will accept the *radius* of a circle and then calculate the *area* and the *perimeter* of a circle.   (4 marks)

d) Using a flow chart, explain the differences between a while loop and a do..while loop as used in structured programming   (6 marks)

e) Distinguish between *or* and *not* logical operators   (2 marks)

Question Three

a) Explain the purpose of **#** sign in the include statement in C programming.   (2 marks)

b) Explain the *conditional operator* giving an example.   (4 marks)

c) Write a C program that will printout numbers *1 to 10* use the for() loop   (4 marks)

d) Explain the different types of parameters.   (4 marks)

e) Write a C program that will accept the item code of a product and display the respective product name using the table below. Use the *Switch case* statement.

Code	Item
A	Pencil
B	Book
C	Pen
D	Rubber

    (6 marks)

QUESTION FOUR

a) Explain the meaning of *control flow* as used in C programming. (2 marks)

b) List any **two** examples of programming languages under the third computer programming language generations. (2 marks)

c) Ufanisi Company limited uses the following information to compute its employees net pay,

        Rate of pay= Ksh 1000 per hour

        Rate of taxation 11%

Write a C program that accepts an employee's name and number of hours worked then computes the net pay and outputs the name, hours worked, gross pay and net pay

   Hint:

   Gross pay= hours worked *rate of pay

   Taxation = gross pay * taxation

   Net pay= gross pay – taxation (5 marks)

d) The following is a C program segment. Use it to answer the question that follows

```
main()
{
        int a,b,c,y;
        b=++a;
        c=b++;
        y=b+c;
}
```

   Give that the value of a is 6, evaluate the value for y. (4 marks)

e) Explain any **four** benefits of using functions in a program (4 marks)

f) State the differences between *continue* and *break* as used in C programming. (3 marks)

QUESTION FIVE

a) Using appropriate examples illustrate the **two** types of *comments* used in C (2 marks)

b) Outline any **three** rules that must be followed when creating an identifier (3 marks)

c) Write a C program that will *prompt* the user to enter **five** marks for **five** Subjects using the keyboard. It should then calculate the *average* of the **five** Subjects and award the appropriate *grade* using the following grading system

AVERAGE	**GRADE**	
>= 75	A	
>= 60	B	
>= 50	C	
>= 40	D	
<40	E	(7 marks)

d) Write a C program that accepts an *integer* number and calculates its *Squire Root* using an in-built function   (5 marks)

e) The following is a C program. Use it to answer the question that follows

```
#include<iostream.h>
{
        Interger I, j, y;
        for(i=1; i<n; i++)
                Y:=i*y;
}
```
Identify **three** errors in the program   (3 marks)