



# MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)

University Examinations 2013/2014

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FIRST YEAR SECOND SEMESTER DIPLOMA IN INFORMATION COMMUNICATION  
TECHNOLOGY

DIT107 STRUCTURED PROGRAMMING

Date: 8/12/2014

Time: 8:00 – 10:00 AM

---

## ***INSTRUCTIONS***

### **Answer Question 1 and any other two questions**

- 1 a) State the *differences* between the following terms.
- i) Functional programming technique and event driven programming.
  - ii) Modularity and Structured theorem.
  - iii) High level languages and Low level languages. (6 marks)
- b) Explain any **three** programming tools that can be used during program development (6 marks)
- c) Explain the meaning of the term *data type* as used in C programming. (2 marks)
- d) Draw a flow chart for a 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

<b><u>AVERAGE</u></b>	<b><u>GRADE</u></b>
>= 75	A
>= 60	B
>= 50	C
>= 40	D
<40	E

All the subject marks should be greater or equal to **zero** and less or equal to **100**.

If the User enters a value that is not within this *range* then the program should *not* calculate the average but should display an error message. (8 marks)

- e) State the reasons why the following identifiers are *invalid*
- i) value\$sum

- ii) exit flag
- iii) 3lotsofmoney
- iv) char (4 marks)

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

2 a) Describe the term *parameter passing* as used in programming and clearly explain the different ways of parameter passing (6 marks)

b) Write a C program that will generate all the *even* numbers in the range **50 to 100**, determines their *sum* and displays the even numbers and the sum. Use *for.....loop* (6 marks)

c) 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;
}
```

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

d) State the differences between *continue* and *break* as used in C programming. (4 marks)

3 a) Identify **six** errors in the following C program

```
#include<stdio.h>
main()
{
    Float p,r,l,f;
    Printf("enter the principal value(p)"
    Scanf("%f",&p);
    Printf("enter the Interest rate (r)"
    Scanf("%f",&r);
    Printf("enter the num if years (n)"
    Scanf("%f",&n);
    I=r/100;
    F=p*pow((1+i)n);
    Printf("/n the ultimate value (f) is :%.2f/n",f)
    {
```

(6 marks)

b) Write a C program that accepts a **4** digit number and then outputs it in the reverse order. Use *for.....loop* control structure. (4 marks)

c) State the *difference* between the following expressions

- i) =
- ii) ==

(2 marks)

- d) With the help of a flow chart, differentiate between the *while loop* and the *do...while loop* (6 marks)
- e) Mary went through a program and met the **&** sign in the *scanf()* statement. *Explain* to her its purpose. (2 marks)
- 4 a) Write a C program that accepts the *length* and *width* of a rectangular piece of land in foot, converts them into meters and then calculates the area. The program should then output the length, width and area in meters. Use a function.  
**Hint** 1 foot=0.3 meters and area =length \*width (5 marks)
- b) 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)
- c) C is a *strongly typed* programming language. Explain the reason why. (2 marks)
- d) Explain the meaning of the term **comments** and illustrate the different methods of inserting comments in a C program (6 marks)
- e) Explain the meaning of the term *syntax* . . . . . (2 marks)
- 5 a) Explain any **three** C programming variable Formatters. (3 marks)
- b) Write a C program that accepts an *integer* number and calculates its *Squire Root* using an in-built function (6 marks)
- c) Explain any **three** types of errors found in a program. (3 marks)
- d) Write a C Program that will accept the *radius* of a circle and then calculate the *area* and the *perimeter* of a circle. (6 marks)
- e) List any **three** examples of **3<sup>rd</sup>** generation programming languages. (2 marks)