MACHAKOS UNIVERSITY

University Examinations for 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY

2920/103: STRUCTURED PROGRAMMING

DATE: 24/4/2019   **TIME: 8.30-11.30 AM**

INSTRUCTIONS

Answer five questions at least two from section one and at least two form section two

SECTION ONE

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.   (12 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)

2   a)   Write a C program that will accept two values through the keyboard and calculate their product.   (6 marks)

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

    c)   Mary went through a program and met the **&** sign in the scanf statement. *Explain* to her it's purpose.   (2 marks)

    d)   State the meaning of the following *escape codes*

        i)   **\n.**

        ii)   **\t.**

        iii)   **\v.**

        iv)   **\a**.   (4 marks)

e) Identify the difference between the following expressions

    i)   =

         = =   (2 marks)

3   a)   Explain the meaning of the following terms as used in C programming

        i.   compiler

        ii.   Interpreter

        iii.   Executable code   (6 marks)

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

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

        i.   value$sum

        ii.   exit flag

        iii.   3lotsofmoney

        iv.   char   (4 marks)

    d)   Explain any four factors one should consider before buying a programming Language

                                                            (4 marks)

    e)   Outline the two types of comments   (2 marks)

4   a)   Explain the *top down* and the *bottom down* approach .   (4 marks)

    b)   Explain any **four** qualities of a *good program.*   (4 marks)

    c)   Write a C program that accepts an *integer* number and calculates its square root

                                                            (4 marks)

    d)   Write a pseudo code for a program that will accept a value then display the value, and a Message indicating whether the value is an *even* number or an *odd* number.   (4 marks)

    e)   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)

SECTION TWO

5   a)   Define the term *identifier* as used in programming.   (2 marks)

    b)   Explain **two** advantages of modular programming.   (4 marks)

    c)   A module I student intents to create a program that would accept the amount of money spent in a supermarket in Kenya shillings. The program should then calculate the equivalent of the amount in either dollars or pounds and out put the results.

    i)   Draw a flow chart to represent the program logic.   (4 marks)

ii) Write a Pascal program to implement the design in (i). Use the rates: 1 dollar= Ksh 85 and 1 pound= Ksh 130. (6 marks)

d) Distinguish between *or* and *not* logical operators as used in Pascal programming.

(4 marks)

6. a) i) Outline **two** advantages of using an interpreter to translate a program.(2 marks)

ii) Explain **two** uses of comments in a Pascal program. (4 marks)

b) Write a Pascal program that accepts the total number of words in a book and the number of words per page. The program then computes the number of pages and displays the results. (6 marks)

c) Distinguish between *simple* and *compound* statements as used in Pascal programming.

(4 marks)

d) Explain each of the following terms as used in Pascal programming.

i) selection

ii) iteration. (4 marks)

7 a) Explain **two** advantages and **two** disadvantages of using a flowchart in program design.

(4 marks)

b) Study the following program and answer the questions that follow.

```
Program get area (input,output)
const rate := 0.1;
var 2salary, pension, integer;
writeln (Enter the basic salary of an employee);
read(Bsalary);
pension = rate*2salary,
Nsalary = 2salary + pension
writeln(===========================)
writeln(Your new salary is Nsalary)
end.
```

(i) Identify the errors in the program. (6 marks)

(ii) Rewrite the program correcting the errors identified in (i). (5 marks)

c) Write a program that could accept the name and age of a student. The program should the output either "_____You old enough to vote" if the age is greater than 18 years

or " _____You can't vote") otherwise. The dashes should be filled with the name of the student. (5 marks)

8 a) Outline **four** benefits of program documentation to the end user. (4 marks)

b) Table 1 shows the main menu of a management information system. Use it to answer the question that follows.

Option	Menu Activity
1	Capture a New Student
2	Edit Record
3	Check Balance
	Close Record

Table 1

Write a Pascal program that would prompt a user to enter an option. The program then outputs the menu activity. (6 marks)

c) Distinguish between program *execution* and *deployment* as used in programming.

(4 marks)

d) Explain **three** stages in program development. (6 marks)