



MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FIRST YEAR SECOND TERM EXAMINATION FOR

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY

2920/103: STRUCTURED PROGRAMMING

DATE: 9/6/2021

TIME: 8.30-11.30 AM

INSTRUCTIONS

Answer any five questions

SECTION ONE

- 1 a) State the *differences* between the following terms.
 - i. Top down Approach and Bottom Up Approach
 - ii. Constant and Variable
 - iii. Reserved Words and Identifier.
 - iv. Compiler and Interpreter (8 marks)
- b) Explain any **three** programming tools that can be used during program development (6 marks)
- c) Write a C program that will accept one value representing the radius of a circle through the keyboard. The program should then calculate the area and perimeter of the circle and display the results. Use **Pie** as 3.14 (6 marks)
- 2 a) With the Aid of a diagram, Describe the different parts of a decision table. (6 marks)
- b) Using an example, explain the *Conditional Operator*. (4 marks)
- c) Describe the general syntax of the main input file. (4 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) =

ii) == (2 marks)

3 a) ABC company wants to establish a programming unit, as a computer programming expert explain to the management any **four** factors they should consider when choosing a programming language (4 marks)

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

c) Explain the different methods of initializing a variable (4 marks)

d) Write a c program that will accept the first character of your gender, the program should the print a message indicating if you are male or female. **NB** the program should take care of uppercase and lower case characters. (6 marks)

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

4 a) 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)

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

c) Explain any four *data types* used in C programming (4 marks)

d) Write a *decision table* for a program that will accept the **age** of a student and the display the appropriate message. If the student's age is *above 35* then the system should display **very old**, if age is *above 20* then the system should display **old** otherwise the system should display **very young**. (6 marks)

e) List any **two** examples of programming languages under the fifth Computer Language generations (2 marks)

- 5 a) Explain the differences between the following terms.
- i. Executable code and Source code
 - ii. Programming Language and a Program
 - iii. Imperative programming technique and monolithic technique (6 marks)
- b) Explain **two** advantages of modular programming. (4 marks)
- c) Write a c program that will accept three values through the keyboard, the program should the output the largest number among the three (6 marks)
- d) State the differences between *if statement* and the *multiple if statement* (4 marks)
6. a) Distinguish between *or* and *not* logical operators as used in C programming. (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) Explain any **Four** types of Feasibility studies conducted during program development life cycle (4 marks)
- d) Explain the two main types of program designs (4 marks)
- e) Explain any four rules for creating identifiers (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.
- ```
#include
Int main
{
const rate=0.1;
int salary,pension;
printf(Enter the basic salary of an employee)
scanf(Bsalary)
pension = rate*2salary,
Nsalary = 2salary + pension
printf(=====);
printf(Your new salary is Nsalary);
}
```

- (i) Identify the errors in the program. (6 marks)
- (ii) Rewrite the program correcting the errors identified in (i). (6 marks)
- c) Using examples, explain the logical operators (4 marks)
- 8 a) Outline **four** benefits of program documentation to the end user. (4 marks)
- b) Explain the differences between the following terms
- i. White box testing and Black box testing
  - ii. Curative maintenance and adaptive maintenance
  - iii. Object code and source code
  - iv. System analyst and Programmer (8 marks)
- c) Outline the different types of test data used in program testing. (4 marks)
- d) Explain the different types of program Implementation. (4 marks)