



# MACHAKOS UNIVERSITY

University Examinations for 2019/2020

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

DIPLOMA IN INFORMATION TECHNOLOGY

2920/103: STRUCTURED PROGRAMMING

DATE: 14/12/2020

TIME: 8.30-11.30 AM

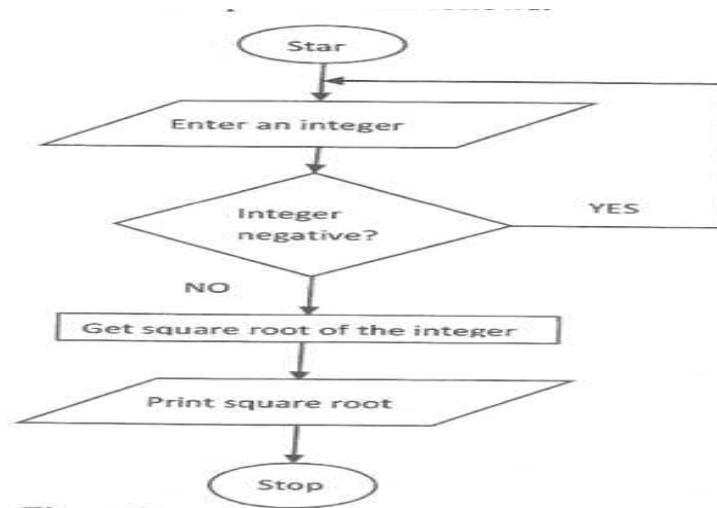
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## INSTRUCTIONS

*Answer any five questions*

- 1
  - a) State the *differences* between the following terms.
    - i. Writeln() and write() (4 marks)
    - ii. Compiler and Interpreter (2 marks)
  - b) Outline the function of preprocessor directives in c programming Language (5 marks)
  - c) Write a C program that will prompt a user to enter an integer. The program should then check whether the integer entered is a prime number and output the results (2 marks)
  - d) Write a pascal program that will accept one value representing the radius of a circle through the keyboard. The program should then calculate the area of the circle and display the results. Use **Pie** as 3.14 (5 marks)
  - e) The following are identifiers used in c programming language during program writing.  
*Myval, const, integer and switch*  
Citing a reason in each case, state whether these identifiers are valid or not (4 marks)
- 2
  - a) With the Aid of a diagram, Explain the different parts of a decision table. (6 marks)

- b) Define the term pointer as used in C programming (2 marks)
- c) Figure 2 shows a program flowchart used to solve a mathematical problem. Use it to answer the question that follows



- Write a Pascal program to implement the program logic (6 marks)
- d) The following program was created by a student during a programming lesson. Use it to answer the question that follows

```

Program Take_Beverage (input, output);
type
Beverage = (coffee, tea, coke, juice);
var
Drink: Beverage;
begin
Writeln('Which drink would like to take?');
Drink:= juice;
Writeln('Welcome to take your ', Drink);
end.
  
```

- Trace any Errors (4 marks)
- e) Write the general syntax for the case statement in Pascal Programming language (2 marks)
- 3 a) A program is required to prompt a user to enter a none zero integer, the program should then check and output the larger integer
- i. Write a pseudo code to represent the program logic (4 marks)
  - ii. Write a Pascal program to implement the logic (4 marks)
- b) Outline any **three** operators used in C programming. (3 marks)

- c) Outline any two uses of comments in Pascal Programming Language (4 marks)
- d) A newly constructed computer lab is 15 meters long and 10 meters wide. The lab is to be fitted with floor tiles. Write a Pascal program that will prompt a user to enter the length and width of the lab. The program then computes the number of tiles required. One tile has an area of  $0.36\text{m}^2$  (5 marks)
- e) Outline the two types of comments (2 marks)
- 4 a) Outline two reasons why program documentation is important (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) Differentiate between procedure and functions as used in C programming (4 marks)
- e) List any **two** examples of programming languages under the fourth Computer Language generations (2 marks)
- 5 a) Declare a structure of five students with the following characteristics
- Studentname
  - Address
  - Course
  - Department
- Demonstrate how data is captured and displayed in the structure (7 marks)
- b) Explain **three** advantages of modular programming. (3 marks)
- c) Distinguish between *pre-increment* and *post-increment* (4 marks)
- d) Janet, a computer programmer intends to create a program using C programming language. State the program development stage in which she could
- i. Create flow chart
  - ii. Choose the identifiers
  - iii. Check whether the program is giving the desired results
  - iv. Adjust the program to meet new demands (4 marks)
- e) Explain the meaning of the term *strongly typed* (2 marks)
6. a) Distinguish between *or* and *not* logical operators as used in C programming. (4 marks)

- b) Write a C program that will prompt a user to enter weight for five people and store the values in an array. The program should then compute the total and average and the output the results (6 marks)
- c) Explain any **Four** types of Feasibility studies conducted during program development life cycle (4 marks)
- d) Distinguish between parameter passing by value and passing by reference (4 marks)
- e) Explain any **two** applications of Pascal programming language (2 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)