



MACHAKOS UNIVERSITY

University Examinations for 2017/2018

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

**FIRST YEAR FIRST SEMESTER EXAMINATION FOR BACHELOR OF SCIENCE
INFORMATION TECHNOLOGY**

SIT 102: INTRODUCTION TO STRUCTURED PROGRAMMING

DATE: 6/12/2017

TIME: 2:00 – 4:00 PM

INSTRUCTIONS

This paper consists of FIVE questions.

Answer question ONE and any other TWO questions in this paper.

QUESTION ONE (30 MARKS)

- a) Define the following terms giving examples where applicable: (4 marks)
 - i) Program
 - ii) Variable
 - iii) Syntax
 - iv) Function
- b) During program compilation programmers encountered various errors before their programs could execute. Describe the three types of errors they encountered. (6 marks)
- c) Describe four program design tools. (4 marks)
- d) Indicate the data type you use to represent the following items, explaining why you chose to use them (6 marks)

- i. Number of children in a school
 - ii. A letter grade in an exam
 - iii. Average numeric score of all students who sat a CAT in Programming Methodology
- e) You have been employed to head the programming department by an organization. Discuss the steps you would follow when developing various programs for the organization. (6 marks)
- f) Distinguish between object code and source code (2 marks)
- g) Explain the operator precedence rules used in C programming. (2 marks)

QUESTION TWO (20 MARKS)

- a) Differentiate between the following giving examples of how they are expressed:(8 marks)
 - i Variable declaration and variable initialization
 - ii Global variables and local variables
 - iii Call by value and call by reference
 - iv Function definition and function prototype
- b) With the aid of diagrams describe three control structures used in C programming. (6 marks)
- c) Write a program that computes the area of a rectangle, given its dimensions, it should prompt the user for the length and width of the rectangle and then displays the area. (4 marks)
- d) Define a pointer and how it is expressed in C programming. (2 marks)

QUESTION THREE (20 MARKS)

- a) Briefly describe the three classifications of language translators. (3 marks)
- b) Explain using examples the two ways an array can be initialized in C programming language. (4 marks)
- c) List and explain any **five** types of constants used in C programming. (5 marks)
- d) A program is required in C to read two data items and print their sum, difference, product and quotient (8 marks)

QUESTION FOUR (20 MARKS)

- a) Write a program to manage details of a salesman based on the following (10 marks)

Total Sales	Commission (%)
0 – 10,000	5
Above 10,000 up to 50,000	7
Above 50,000	8

- i. Input sales
 - ii. Compute total sales
 - iii. Compute commission based on the above
- b) C programming uses different types of operators. State and explain any five of these operators (5 marks)
- c) With the aid of a design tool, design 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. (5 marks)

QUESTION FIVE (20 MARKS)

- a) Explain the main levels of programming languages by briefly stating (10 marks)
- i) their basic features
 - ii) their advantages
 - iii) their disadvantages
 - iv) relevant examples of these languages
- b) Explain four types of system change over suggesting under what circumstances you will recommend on them (4 marks)
- c) Write a program that produces the menu below and allows users to select a figure and enter the relevant parameter. (6 marks)
- Volume of polygons
- i Cylinder
 - ii Cone
 - iii Cuboid
 - iv Sphere
 - v Exit