



UNIVERSITY EXAMINATIONS

SECOND SEMESTER 2023/2024 ACADEMIC YEAR

**FOURTH YEAR EXAMINATION FOR THE DEGREE OF
BACHELOR OF COMPUTER SCIENCE AND BACHELOR
OF SCIENCE IN (ICT)**

BICT 416: PRINCIPLES OF PROGRAMMING LANGUAGES

STREAM: R

TIME: 2 HRS

DAY: TUESDAY [8.30 – 10.30 A.M]

DATE: 16/04/2024

THIS QUESTION PAPER CONSISTS OF THREE (3) PAGES

PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.



INSTRUCTIONS

- i. **Question One is COMPULSORY.**
- ii. **Attempt any other TWO Questions from the remaining section.**
- iii. **Do not write on the question paper**
- iv. **Show your working clearly**

SECTION A: (30 MARKS)**QUESTION ONE**

- a) Define the following terminologies
 - i. Assembler **(1 Mark)**
 - ii. Compiler **(1 Mark)**
 - iii. Variable **(1 Mark)**
 - iv. Algorithm **(1 Mark)**
- b) Briefly describe four data types used in C programming. **(4 Marks)**
- c) Describe five characteristics of a good algorithm. **(5 Marks)**
- d) Define an array and describe the three types of arrays. **(6 Marks)**
- e) Define a high-level language and state four advantages of it **(5 Marks)**
- f) What are Comments? Explain how to include comments in a C program. **(6 Marks)**

SECTION B: (ANSWER ANY OTHER TWO QUESTIONS)**QUESTION TWO: (20 MARKS)**

- a) Write a C program to find the sum of two integer values. **(6 Marks)**
- b) Write an algorithm for calculating the area of a rectangle. **(4 Marks)**
- c) Draw a flowchart for (b) above. **(5 Marks)**
- d) Write a C program that displays odd numbers between 1 and 20 using the for loop. **(5 Marks)**

QUESTION THREE: (20 MARKS)

- a) Write the syntax of the following:
 - i. If statement (2 Marks)
 - ii. If...else statement (2 Marks)
 - iii. For loop (2 Marks)
 - iv. Do...while loop (2 Marks)
 - v. While loop (2 Marks)

- b) Distinguish between a compiler and an interpreter. (4 Marks)

- c) With relevant examples, describe the three ways of initialising variables. (6 Marks)

QUESTION FOUR: (20 MARKS)

- a) Outline three differences between machine language and a high-level language. (6 Marks)

- b) With the aid of examples, distinguish between a IF... Then and Select Case control structures. (4 Marks)

- c) Write a C program to display the following text
 - Laikipia University
 - P.O Box 1100 – 20300
 - NYAHURURU
 - www.laikipia.ac.ke(6 Marks)

- d) Distinguish between a user defined function and a predefined function in computer programming. (4 Marks)

QUESTION FIVE: (20 MARKS)

- a) Explain the following terms as used in Object Oriented Programming (OOP):
 - i. Abstraction (2 Marks)
 - ii. Encapsulation (2 Marks)
 - iii. Polymorphism (2 Marks)
 - iv. Inheritance (2 Marks)

- b) Describe the syntax of the IF THEN statement (3 Marks)

- c) Outline the common primitive and non-primitive data types that are used in programming. (2 Marks)

- d) Distinguish between the break and continue statements as used in programming. (4 Marks)

- e) Differentiate between Implicit and Explicit type conversions. (4 Marks)

