



Kasarani Campus
Off Thika Road
Tel. 2042692 / 3
P. O. Box 49274, 00100
NAIROBI
Westlands Campus
Pamstech House
Woodvale Grove
Tel. 4442212
Fax: 4444175

KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2023/2024 ACADEMIC YEAR
FIRST YEAR, FIRST SEMESTER EXAMINATION
FOR THE BACHELOR OF SCIENCE IN MATHEMATICS
KCS 101 – INTRODUCTION OF PROGRAMMING

Date: 05TH December 2023
Time: 11:30AM – 1:30PM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

- a) Distinguish between the following terminologies as used in C Programming Language
- While loop and do while loop
 - Variables and Constants
 - Printf and Scanf (6 Marks)
- b) Describe why the function main () is special in a c program (2 Marks)
- c) Discuss the two methods of including comments in your C program (2 Marks)
- d) Write a simple program in C Programming Language using the while and do while loops. (5 Marks)
- e) i. Define a data type (1 Mark)
ii. Describe the four categories of data types in C Programming Language (4 Marks)
- f) i. Create a structure named salary to store the information about an employee with the following elements (4 Marks)
- Name (up to 20 characters)
 - Department (up to 10 characters)
 - Basic_ pay
 - House_ allowance
- ii. After creating the structure declare a variables named employee from the structure (2 Marks)
- g) Explain four rules what should be followed when declaring variables (4 Marks)

QUESTION TWO (20 MARKS)

- a) Why files are commonly used in C programming (3 Marks)
- b) Write a C programming code that create a file (kwust.txt) with a list a 10 students in it (5 Marks)
- c) Explain different files opening modes, and write a C programming language applying any of the file opening mode to read (kwust.txt) (6 Marks)
- d) Write a simple program that demonstrates the if...else if and else control statement. (6 Marks)

QUESTION THREE (20 MARKS)

- a) What is Recursion and it benefits in C programming (3 Marks)
- b) Write a C program that can generate Fibonacci series using recursive function (6 Marks)
- c) What is Error handling and its applicable uses in program development (5 Marks)
- d) Write a C program of your choice, with error handling functionality and explain what it does (6 Marks)

QUESTION FOUR (20 MARKS)

- a) Differentiate between recursive functions and iterative functions. (4 Marks)
- b)
 - i. Explain the importance of the function prototype (2 Marks)
 - ii. Explain any two benefits of using a function (2 Marks)
- iii. Write a program that computes both the area and circumference of a circle. Define two functions called area () and circum () to compute and return the area and circumference of the circle respectively (8 Marks)
- c) Explain the following data structured used in c; include a program illustration. (4 Marks)
 - i. Arrays
 - ii. Structures

QUESTION FIVE (20 MARKS)

- a) What is array and applicable uses of arrays (2 Marks)
- b) Write a C program, where user input numbers are stored in arrays, and compute total, average, maximum and minimum number (6 Marks)
- c) A program is required to process and award students grades for students in a class according to the following summary table.

Marks%	Grade
80 – 100	A
60 – 79	B
40 – 59	C
Below 40	Fail

Write a C program that prompts the user for the student’s marks and outputs the appropriate grade using nested if else statement. The else option should print an error message “Wrong Marks”(6 Marks)

- d) Using relevant examples and C programming codes describe 3 string functions (6 Marks)