

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

FIRST YEAR EXAMINATION FOR THE AWARD OF
DEGREE IN BACHELOR OF SCIENCE IN APPLIED COMPUTER SCIENCE

ACSC 121: PROGRAMMING PARADIGMS

STREAMS: BSC. APPLIED COMPUTER SCIENCE Y1S1

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 16/12/2020

8.30AM – 10.30AM

INSTRUCTIONS

Answer Question 1 and Any Other Two.

SECTION A: Answer all questions in this section

QUESTION ONE (30 Marks)

- a) Define the following terms as used in computer programming **[3 marks]**
 - i. Algorithm
 - ii. Pseudocode
 - iii. Flowchart
- b) Consider a program that reads two values and compares them in order to display the larger of the two.
 - i. Draw the flowchart **[4 marks]**
 - ii. Write the program **[6 marks]**
- c) Explain how the following control structures work **[4 marks]**
 - i. Iteration
 - ii. Selection
- d) Describe the structure of a C function **[3 marks]**
- e) Write a function that calculates the area of a circle. **[4 marks]**
- f) Define the term array **[2 marks]**
- g) Write a program that creates an array of 10 integers then displays them in reverse order. **[4 marks]**

SECTION B: ATTEMPT ANY TWO QUESTIONS (40 MARKS)**QUESTION TWO (20 MARKS)**

- a) Show, using C programming language statements, how you would declare variables to contain the following values. Use variable names of your choice. **[4 marks]**
- i. The age of an individual
 - ii. The value 42.36
- b) Write a program with a function containing an array of five names. The function should then display the names on the screen when called. **[6 marks]**
- c) Mrs. Oriedi wants a program to help her track her monthly household expenditure. Usually she makes sure that one third of the total household expenditure equivalent is put in a savings account. Write this program. **[6 marks]**
- d) In what way are strings handled in C programming? Give an example. **[4 marks]**

QUESTION THREE (20 MARKS)

- a) Describe any **THREE** types of errors you can encounter in a program **[6 marks]**
- b) Why are variables important in a program? **[2 marks]**
- c) Use the while statement to write a program that calculates the product of the numbers 1 to 10. **[6 marks]**
- d) Use a flow chart diagram to explain how the if else statement works **[6 marks]**

QUESTION FOUR (20 MARKS)

- a) Write a program that stores the following statement: “Programming is the cornerstone of software applications”. Make sure the statement is read through the keyboard and stored in a string variable before it is displayed. **[6 marks]**
- b) Describe the relationship between **printf()**, **scanf()** and the **<stdio.h>** header file. **[6 marks]**
- c) A program is required to sum all the even numbers from 1 to 20.
- i. Write the pseudocode for this program **[2 marks]**
 - ii. Write the program **[4 marks]**
- d) List any **TWO** rules followed when choosing variable names. **[2 marks]**

QUESTION FIVE (20 MARKS)

- a) Explain the role of the following parts of a C program **[6 marks]**
- i. `#include <stdio.h>`
 - ii. `#include <conio.h>`
 - iii. `int main()`
- b) Write a program in C that receives the value of radius, which is passed to a function named `CIRC_AREA` that computes and returns for display the area of the circle. `PI` is declared as a symbolic constant. **[6 Marks]**
- c) Write a code segment that can display numbers divisible by either 7 or 8 in the range 20 and 80. The values are displayed in descending order(largest first) **[6 Marks]**
- d) Change the code in c above to display numbers divisible by both **[2 Marks]**