



**UGANDA INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
WEEKDAY/WEEKEND PROGRAMME END OF SEMESTER TWO EXAMINATIONS**

ACADEMIC YEAR 2023/2024

DEPARTMENT: ICT

SEMESTER: TWO

**PROGRAMME(S): DIPLOMA IN COMPUTER SCIENCE (DCS)
YEAR OF STUDY: TWO**

COURSE: STRUCTURED SOFTWARE DEVELOPMENT

COURSE CODE : CSC122

DATE: FRIDAY 27TH, JUNE 2025

TIME: 2:00 PM – 5:00 PM

DURATION: 3 HOURS

INSTRUCTIONS:

- (i) This paper contains two Sections: A (40 marks) & B (60 marks).**
- (ii) Attempt ALL questions in Section A, and ONLY THREE questions in Section B.**
- (iii) All questions in Section B carry equal marks.**
- (iv) Credit will be given for use of relevant examples and illustrations.**
- (v) Begin each number in Section B on a new page of the answer sheet.**
- (vi) DO NOT write on this question paper.**

SECTION A [40 MARKS]

STRUCTURED SOFTWARE DEVELOPMENT

Attempt **ALL** the Questions in this Section.

1. Describe the basic structure of a C program, listing its essential sections and their purpose. **(4 marks)**
2. Explain the difference between variables, constants, and data types in C programming, giving one example of each. **(4 marks)**
3. List and explain any four types of operators used in C, with one example statement for each. **(4 marks)**
4. Differentiate between **while**, **do-while**, and forloops in C. Provide the syntax of each and explain when you would prefer to use one over the others. **(4 marks)**
5. Explain the use of the **switch-case** statement in C programming. Write a sample program that uses **switch-case** to display the day of the week based on a number input from the user. **(4 marks)**
6. What are keywords and identifiers in C? List any five keywords and explain the rules for naming identifiers. **(4 marks)**
7. Explain the concept of precedence and associativity in C operators. Why are these concepts important when writing expressions? Provide a practical example. **(4 marks)**
8. Write a simple C program that reads two numbers from the user, adds them, and displays the result. Clearly label the input, processing, and output sections. **(4 marks)**
9. What is the purpose of **break** and **continue** statements in C loops? Explain each with a short example program. **(4 marks)**
10. With an example, explain how type casting is done in C. State the difference between implicit and explicit type conversion. **(4 marks)**

STRUCTURED SOFTWARE DEVELOPMENT

SECTION B [60 MARKS]

Attempt **ONLY THREE** Questions in this Section.

Question 1

A school wants to develop a small system to grade students based on their marks in a subject. The system should ask the user to enter a student's score (from 0 to 100). Depending on the score, the program should display the following results:

- •If the score is 90 and above, print "Excellent"
- •If the score is between 80 and 89, print "Very Good"
- •If the score is between 70 and 79, print "Good"
- •If the score is between 60 and 69, print "Fair"
- •If the score is below 60, print "Fail"

Task:

- Use conditional statements (if-else-if ladder or switch-case) to implement this logic.
- Ensure that the program continues to accept and grade student marks until the user decides to stop (use a loop).
- Use break and continue statements appropriately where necessary. Write a C program for this system and explain how control structures and loops are used to solve this problem. **(20 marks)**

Question 2

A programmer wants to repeatedly ask a user to enter a positive number. The program should keep asking until the user enters a number greater than zero. Implement this scenario using a do-while loop. **(20 marks)**

STRUCTURED SOFTWARE DEVELOPMENT

Question 3

An engineer wants to monitor a machine that runs a maximum of 5 cycles. Write a C program using a for loop to print the cycle number and stop automatically after completing the 5 cycles. **(20 marks)**

Question 4

A finance officer wants to calculate the net salary of employees. The program should accept the basic salary, then add 20% housing allowance and 10% transport allowance to compute the total. Write a C program segment to perform these calculations and display the total salary. **(20 marks)**

Question 5

A software development company is creating a simple billing system for a small retail shop. As a junior programmer, you are asked to write a C program to calculate the total price a customer has to pay for purchasing three different products. Each product has a fixed price and a quantity entered by the user. The program should display the total amount to be paid.

Task:

- Declare and initialize appropriate variables using correct data types for product prices and quantities.
- Use arithmetic operators to calculate the total price for each product and the final amount.
- Display the final total to the customer.

Write a complete C program for this scenario and explain the role of data types, variables, and arithmetic operators used in your program. **(20 marks)**