



Where Leaders are Made

UNIVERSITY EXAMINATIONS: 2025/2026
EXAMINATION FOR THE CERTIFICATE IN INFORMATION
COMMUNICATION TECHNOLOGY
CICT 0113

INTRODUCTION TO PROGRAMMING CONCEPTS
END TERM EXAMINATION

DATE: TUESDAY 9TH DECEMBER, 2025 TIME: 8:30AM-10:30AM
DURATION: 2 HOURS

INSTRUCTIONS: Question One is Compulsory, Choose Three Other Questions

SECTION A (COMPULSORY)

QUESTION ONE (15 Marks) Compulsory

- a) Explain the significance the compilation process in C programming. **(2 marks)**
- b) Outline four key rules for naming variables in C, giving examples where necessary. **(4 marks)**
- c) Write a step-by-step algorithm to add three integer numbers provided by a user. Your algorithm should include variable declarations, input handling, computation, and output. **(4 marks)**
- d) Discuss the following programming language translators: **(5 marks)**
 - i. Assembler
 - ii. Compiler
 - iii. Interpreter

SECTION B: (ANSWER ANY THREE (3) QUESTIONS IN THIS SECTION)

QUESTION TWO (15 marks)

- a) Describe the following conditional statements used in C programming and give a simple example of each: **(4 marks)**
 - i. if
 - ii. if...else
 - iii. else if
 - iv. switch

- b) Consider the following C code snippet:

```
int items = 50;

float cost_per_item = 9.99;

float total_cost = items * cost_per_item;

char currency = '$';

printf("Number of items: %d\n", items);

printf("Cost per item: %.2f%c\n", cost_per_item, currency);

printf("Total cost = %.2f%c\n", total_cost, currency);
```

- i. Explain the purpose of this program. **(2 marks)**
 - ii. Calculate and state the total cost output by the program. **(2 marks)**
 - iii. Identify the data type used to store the currency symbol and justify its choice. **(1 mark)**
- c) Discuss the following categories of operators in C programming, providing examples for each: **(6 marks)**
- i. Assignment Operators
 - ii. Relational Operators
 - iii. Logical Operators

QUESTION THREE (15 marks)

- a) Explain how the statements break, continue, and goto affect the flow of loop execution, giving examples. **(6 marks)**
- b) Write a C program that uses a switch statement to determine and display the day of the week based on a numeric input from the user (1 to 7). Include appropriate handling for invalid inputs. **(7 marks)**
- c) Explain the advantages of using switch statements over multiple if-else statements. **(2 marks)**

QUESTION FOUR (15 marks)

- a) Highlight three key advantages of using functions in C programming. **(3 marks)**
- b) Write a C program that defines and uses a function named add() to perform the addition of two integers. The function should accept two integer arguments and return their sum. Call the function with the values 13 and 7, and display the result. **(7 marks)**
- c) Explain the concept of pass-by-value versus pass-by-reference in C. **(5 marks)**

QUESTION FIVE (15 marks)

- a) Explain the significance of an algorithm in programming. **(3 marks)**
- b) Design a pseudocode to calculate the factorial of a given number provided by a user. **(6 marks)**
- c) Write a C program based on your pseudocode to calculate the factorial of a number entered by the user. **(6 marks)**

QUESTION SIX (15 marks)

- a) Differentiate between primitive data types and derived data types. **(4 marks)**
- b) Explain how arrays improve data organization and program efficiency. **(5 marks)**
- c) Write a C program that uses a for loop to print the first 10 natural numbers and calculate their sum. Display the output in a readable format. **(6 marks)**