

CHUKA

UNIVERSITY



UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF COMMERCE

BCOM 364: INTRODUCTION TO COMPUTER PROGRAMMING
METHODOLOGIES

STREAMS: BCOM (ODEL)

TIME: 3 HOURS

DAY/DATE: TUESDAY 05/08/2025

2.30 P.M. – 5.30 P.M.

INSTRUCTIONS:

- Answer question **ONE** and **TWO** other questions
- Do not write anything on the question paper
- This is a **closed book exam**, no reference materials are allowed in the examination room
- There will be **NO** use of mobile phones or any other unauthorized materials
- Write your answers legibly and use your time wisely.

SECTION A (Answer ALL questions in this section)**QUESTION ONE (30 Marks)**

a) Explain the purpose of the following components in a C++ program structure:

- i) `#include <iostream>` (2 marks)
- ii) `using namespace std;` (2 marks)
- iii) `int main()` (2 marks)

b) Define the following programming terms and illustrate how they are used in a program:

- i) Variables (3 marks)
- ii) Constants (3 marks)

c) List THREE rules for naming identifiers in C++. (3 marks)

d) Explain the difference between the following data types and give their size:

- i) `int` and `float` (3 marks)
- ii) `char` and `bool` (3 marks)

- e) Write a simple C++ program that declares two integer variables for price and quantity, assigns values to these variables (price = 50, quantity = 10) and calculates and displays the total cost (price $\times$ quantity) (6 marks)
- f) Explain what happens when you use the following operators in C++:
- i) Assignment operator (=) (2 marks)
 - ii) Modulo operator (%) (2 marks)
- g) What is the difference between cout and cin in C++? Give an example of each. (3 marks)

Question Two [20 Marks]

- a) Explain the purpose of control structures in programming and list the THREE main types. (5 marks)
- b) Write a C++ program that asks the user to enter two numbers and displays the larger number using an if-else statement. (8 marks)
- c) Explain when you would use a switch statement instead of multiple if-else statements. Give a practical business example. (4 marks)
- d) What is the purpose of the break statement in a switch case? (3 marks)

Question Three [20 Marks]

- a) Explain the difference between the following loop types:
 - i. for loop (3 marks)
 - ii. while loop (3 marks)
 - iii. do-while loop (3 marks)
- b) Write a C++ program using a for loop to calculate and display the sum of numbers from 1 to 10. (6 marks)
- c) Explain the purpose of the following statements in loops:
 - i) break statement (2 marks)
 - ii) continue statement (3 marks)

Question Four [20 Marks]

- a) Define what a function is in C++ programming and explain TWO advantages of using functions. (5 marks)
- b) Explain the purpose of the following logical operators:

- i) AND (&&) (2 marks)
- ii) OR (||) (2 marks)
- iii) NOT (!) (2 marks)
- c) Write a simple C++ function called calculateArea that takes length and width as parameters and returns the area of a rectangle. Include the function call in your main program. (9 marks)

Question Five [20 Marks]

- a) Define an array in C++ and explain why arrays are useful in business applications. (4 marks)
 - b) Write a C++ program that calculates the simple interest using the formula: $\text{Simple Interest} = (\text{Principal} \times \text{Rate} \times \text{Time}) / 100$. The program should ask the user to input principal, rate, and time. (10 marks)
 - c) Explain what a pointer is in C++ programming. Give ONE advantage of using pointers. (3 marks)
 - d) What is the difference between the * (asterisk) and & (ampersand) operators when working with pointers? (3 marks)
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