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University Examinations 2024/2025

FIRST YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE BACHELOR OF BUSINESS INFORMATION TECHNOLOGY, BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY, BACHELOR OF SCIENCE IN INFORMATION SCIENCE, BACHELOR OF SCIENCE IN DATA SCIENCE, BACHELOR OF SCIENCE IN COMPUTER SCIENCE, BACHELOR OF SCIENCE IN COMPUTER TECHNOLOGY, BACHELOR OF SCIENCE IN COMPUTER SECURITY AND FORENSICS, BACHELOR OF SCIENCE IN MATHEMATICS AND COMPUTER SCIENCE, BACHELOR OF SCIENCE IN MATHEMATICS, BACHELOR OF SCIENCE IN STATISTICS, BACHELOR OF SCIENCE IN ACTUARIAL SCIENCE, BACHELOR OF EDUCATION (MATHS/COMPUTER STUDIES), (COMPUTER/PE), (COMPUTER/GEOGRAPHY), (PHYSICS/COMPUTER STUDIES)

CIT 3102: FUNDAMENTALS OF COMPUTER PROGRAMMING

DATE: JANUARY 2025   **TIME: 2 HOURS**

INSTRUCTIONS: *Answer question **one** and any other **two** questions*

QUESTION ONE (30 MARKS)

a) Define the term debugging as used in programming   (2 marks)
b) Differentiate between selection and iteration control structures   (4 marks)
c) Using example to show the format specifiers that can be used to achieve the following I/O operations in C programming.
   i).   Read the input of a floating-point number   (2 marks)
   ii). Display the output of a Character variable   (2 marks)
d) Algorithms have several properties of interest. Outline the six properties of an algorithm.
                                                                               (6 marks)
e) Differentiate between a *do ...while* loop and a *while* loop   (4 marks)
f) Outline the basic structure of a C program   (4 marks)

g) The smallest individual units in a C program are known as C Tokens. Outline the six types of tokens used in C programming language. (6 marks)

QUESTION TWO (20 MARKS)

a) State an inbuilt C function that could perform each of the following:
   i).   Join two strings   (1 mark)
   ii). Convert character to lower case   (1 mark)
   iii). Counts the number of characters in a string   (1 mark)
   iv). Compares two strings   (1 mark)
b) Write a C program that prompts the user to enter two numbers. The program should make a function call to a function that computes their product, and finally output the result. (6 marks)
c) Using a *while* loop, write a C program that calculates the sum of all odd numbers in the range 50 to 100, and displays the sum. 6 marks)
d) Using examples, discuss the two ways of defining constants in C programming. (4 marks)

QUESTION THREE (20 MARKS)

a) Using relevant examples, define the following terms as used in C programming:
   i).   Keyword   (2 marks)
   ii). Identifier   (2 marks)
   iii). Variable   (2 marks)
b) Using an example, write code segment to demonstrate how the following parts of a function in C programming.
   i).   Function call   (2 marks)
   ii). Function declaration   (3 marks)
   iii). Function definition   (3 marks)
c) A scope of a variable is the section or region of a program where a variable has its existence. Discuss three scopes of variables in C programming language. (6 marks)

QUESTION FOUR (20 MARKS)

a)   Using an example, explain the purpose of a comment in a C program (2 marks)
b)   A student is graded based on exam performance and class attendance. When the performance is above 50% and class attendance greater that 74%, the student is awarded "Pass". When the attendance is less than 75%, the student retakes the course. Otherwise, the student sits for a supplementary exam. Draw a flowchart to represent this logic. (6 marks)
c)   The table below shows outcomes of a competency-based test. Use it to answer the question that follows

Outcome	Meaning

E	Exceeding Expectation
M	Meeting Expectation
A	Approaching Expectation
B	Below Expectation
Any other	Enter a valid outcome

Using a switch statement, write a program in C programming language that prompts a user to enter the outcome. The program then displays the corresponding meaning. (6 marks)

d) Write a program in C language that accepts 5 numbers and stores them in an array. The program then displays the numbers in the reverse order, (6 marks)

QUESTION FIVE (20 MARKS)

a) A program that is destined to perform several tasks can be divided into segments, such that each of the segments performs a specific task. Discuss four advantages of using functions to modularize a large program. (8 marks)

b) Loop control statements are used to alter the execution of a loop from its normal sequence. Using relevant examples, distinguish between *break* and *continue* statements. (6 marks)

c) Write a C program to calculate the factorial of a number using a loop. (6 marks)