ZIMBABWE EZEKIEL GUTI UNIVERSITY

FACULTY OF SCIENCE, TECHNOLOGY, AGRIC AND FOOD SYSTEMS DEVELOPMENT

DEPARTMENT OF DIGITAL TECHNOLOGY AND INFORMATION SYSTEMS

EXAMINATION PAPER

COURSE CODE	:	BIS115
COURSE TITLE	:	Principles of Programming Languages
SPECIAL REQUIREMENTS	:	None
DURATION	:	3 Hours
LEVEL	:	1.1
DATE	:	2025 29 JUL 2025

INSTRUCTIONS TO CANDIDATES:

1. This paper consists of 2 sections
2. Answer **ALL** Questions in SECTION A and ANY TWO Questions from SECTION B in booklet provided.
3. Start each Question on a new page
4. All questions must be answered using C programming language

There are 4 printed pages for this question paper

SECTION A

*Answer **ALL** questions from this section. The section carries **60 marks***

Question 1

Explain the following programming terms:

a) Computer program
b) Programming language
c) Program statement
d) Compiler
e) Procedural programming **[5 x 2 marks]**

Question 2

Discuss the differences between the following programming terms and concepts:

a) Operator and operand
b) printf and scanf
c) Compiler and interpreter
d) Runtime error and syntax error
e) Unary operator and binary operator **[5 x 2 marks]**

Question 3

Compute the values of the following C expressions assuming that **a, b** and **c** are integer variables and **d** is a float variable as declared below.

```
int a = 2, b = 3, c = 4;
float d = 5.0;
```

i) (b + 2) / b + 2
ii) b * c / d
iii) a / (b / c - 1)
iv) b % c * (a / d)
v) ++a + b-- **[5 x 2 marks]**

Question 4

State any **10** operators that are supported by C and write valid expression using each of the selected operators **[10 Marks]**

Question 5

a) State **TWO** reasons why we might use pseudocode to write an algorithm **[4 marks]**

b) The following algorithm calculates the area of a floor in order to calculate the required size of a carpet. Trace the values in each variable after the execution of each line. You should assume an input value of 30.5 for length and 25 for width.

1. Display "What is the width of the floor?"
2. Input width
3. Display "What is the length of the floor?"
4. Input length
5. area = length * width
6. Output "For your floor you will need a carpet that is:"
7. Output area

[6 marks]

Question 6

State any **5** guidelines which are used for naming variables **[10 marks]**

SECTION B

*Choose any **TWO** questions from this section. Each question carries **20 marks**.*

Question 7

A company insures its drivers in the following cases:

a) If the driver is married.

b) If the driver is unmarried, male & above 30 years of age.

c) If the driver is unmarried, female & above 25 years of age.

In all other cases the driver is not insured. If the marital status, sex and age of the driver are the inputs, write a program to determine whether the driver is to be insured or not. **[20 marks]**

Question 8

a) Write a program that solves quadratic equations. Given that any quadratic equation is in the form: $ax^2 + bx + c = 0$, a solution to x is given by the following formula:

$$x = \frac{-b \pm \sqrt[2]{b^2 - 4ac}}{2a}$$

[20 marks]

Question 9

a) Write a program that will accept radius of a circle and given that *pi=3.142*, the program must determine and display the area of a circle **[10 Marks]**

b) Write a C program which calculates and display the sum and average of all numbers between 1 and 10.

[10 marks]

*** * * Wish you all the best * * ***