ZIMBABWE EZEKIEL GUTI UNIVERSITY

FACULTY OF HEALTH, SCIENCE AND TECHNOLOGY

DEPARTMENT OF DIGITAL TECHNOLOGY

EXAMINATION PAPER

COURSE CODE	:	MIS 105
COURSE TITLE	:	Principles of Programming Languages
SPECIAL REQUIREMENTS	:	None
DURATION	:	3 Hours
LEVEL	:	1.1
DATE	:	November 2021

10 FEB 2022

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

There are 4 printed pages for this question paper

SECTION A

Answer all questions from this section

Question 1

a) Consider the code below and format it in a more familiar, human-readable form.

```
char compare(int p1,int p2){if(p1==p2)return('=');
else if(p1>p2)return('>');else return('<');}
```

[5 marks]

b) Referring to the code in part a), find and write out the following:

i) All the different identifiers.

ii) All the different constants.

iii) All the different operators.

iv) A conditional (logical, boolean) expression.

v) A conditional statement. **[5 x 2 marks]**

[Note that you should copy out exactly what is requested and no more]

c) If, by mistake, the programmer wrote (p1=p2) instead of (p1==p2) how would that change the behaviour of the code? **[5 marks]**

d) Consider the following 3 statements:

i) num = 2;

ii) num = '2';

iii) num = two;

They could all be read out loud by saying "num is assigned two", but they are all different. Briefly describe the differences. **[5 marks]**

Question 2

a) What is an algorithm and why is it useful in program design? **[3 marks]**

b) Design an algorithm for a program that allows user to enter username and password, validate login credentials, determine if login is successful or failed **[7 marks]**

Question 3

a) Suppose the following code is executed

```
int a, b, c;
a = 3;
b = c = 4;
b = a;
a = b;
```

What would be the value for a, b and c? **[6 marks]**

b) Define an array as used in programming. **[3 marks]**

c) Use code examples to demonstrate your understanding of array *declaration* and *initialization* for both one and two dimensional arrays. **[6 marks]**

Question 4

a) Briefly explain the purpose and operations of translators, in particular, assemblers, compilers and interpreters in programming? **[3 marks]**

b) What is the purpose of comments and indention when writing code? **[2 marks]**

c) Write simple code snippets to demonstrate the use of both single and multi-line comments in C. **[5 marks]**

SECTION B

Answer any TWO Questions from this section

Question 5

a) What is a loop? Explain in detail with example **[5 marks]**

b) Write a C program to find the eligibility of admission for a professional course based on the following criteria:

- Marks in Maths >=65
- Marks in Phy >=55
- Marks in Chem>=50
- Total in all three subject >=180 or Total in Math and One Other Subject >=140

[15 marks]

Question 6

Write a C language program using structure *emp* to define employee record containing *empno, name* and *salary*. The program must allow user to input and then display **10** captured records. **[20 marks]**

Question 7

a) Write a C program to check whether a triangle is Equilateral, Isosceles or Scalene. **[10 marks]**

b) Write a C program which calculates and display the sum and average of all odd numbers between 1 and 49. **[10 marks]**

Question 8

a) Define a function **[3 marks]**

b) List TWO types of functions available in modern programming languages **[2 marks]**

c) Design a program that allows user to enter any 2 numbers, display the two values, use function ***swap()*** to swap the values and display the swapped results **[15 marks]**

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