



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 :

08 JUN 2026

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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

State what data types should be used for the following variables and explain your answer.

- i) The name of a carpet manufacturer
 - ii) The phone number of a customer
 - iii) The date an order was placed
 - iv) The length, width and area of a floor in meters
 - v) The number of different carpets a customer has ordered
- [5 x 2 marks]**

Question 2

- a) Suppose the following code is executed

```
int x, y, z;  
x = 3;  
y = z = 4;  
y = x;  
z = x = y;
```

What would be the value for x, y and z? **[6 marks]**

- b) Briefly explain the purpose and operations of **translators**, in particular, **assemblers**, **compilers** and **interpreters** in programming?

[4 marks]

Question 3

- 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 4

a) How do you comment out single and multiple statements in C, give appropriate examples [4 marks]

b) What effects do comments have on a program? [3 marks]

c) What's the purpose of indentation when writing code? [3 marks]

Question 5

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

Question 6

Discuss the difference between the following programming terms:

- i) Variable and constant
- ii) Syntax error and runtime error
- iii) Scanf and printf

[10 marks]

SECTION B:

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

Question 7

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:

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

marks]

[20

Question 8

Sprouts Grocery sells carrots, cabbages and tomatoes at the following prices:

Carrots: \$2 per kg

Cabbage: \$0.40 per head

Tomatoes: \$0.85 per kg.

When a customer reaches the till point of a shop, the till operator enters the quantities (in heads or kg as appropriate) for each of the above products bought. If a customer does not buy a particular product, the value 0 is entered. The total price is then displayed, after which the customer advances the amount he is paying. The till operator enters the amount paid, then the change is calculated and a receipt of payment is printed.

Write a program to simulate the above scenario at Sprouts Grocery

- An example of one such receipt is:

Welcome to Sprouts Grocery

Tel: 09 67546

Vat No: 11782090

Item	Unit Price	Qty	Price(USD)
Carrots		2.00 2	4.00
Cabbage	0.40	0	0.00
Tomatoes	0.85	2	1.70
TOTAL PRICE			5.70
TOTAL PAID			6.00
Change			0.30

Thank you for shopping at Sprouts Grocery!

Please Call Again!

[20 Marks]

Question 9

- a) Write a program that takes the length (l), width (w) and height (h) of a three-dimensional shape as arguments then returns the volume of the shape by multiplying them together ($l * w * h$).

[10 marks]

- b) A road traffic authority has devised a scheme to fine drivers who exceed a speed limit. The fine is \$50 plus \$5 for each kilometer-per-hour exceeding the specified limit plus a penalty of \$100 for any speed over 120 kilometers per hour. Write a function that accepts a speed limit and a measured speed and returns the amount of the fine that should be charged. If the speed limit has **NOT** been exceeded the value returned should be zero.

[10 marks]

* * * Wishing you all the best * * *

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