



GRETSA UNIVERSITY - THIKA

**UNIVERSITY EXAMINATIONS
MAY-AUGUST 2023 SEMESTER**

DIPLOMA IN BUSINESS MANAGEMENT

COURSE CODE: DBCC 014

COURSE TITLE: INTRODUCTION TO BUSINESS

MATHEMATICS

DATE: 00 AUGUST 2023

TIME: 8.00 AM-11.00 AM

INSTRUCTIONS TO CANDIDATES

1. SECTION A IS **COMPULSORY**.
2. SECTION B: ANSWER ANY OTHER **THREE** QUESTIONS.
3. **DO NOT** WRITE ANYTHING ON THIS QUESTION PAPER AS IT WILL BE AN EXAM IRREGULARITY.
4. ALL ROUGH WORK SHOULD BE AT THE BACK OF YOUR ANSWER BOOKLET AND CROSSED OUT.

CAUTION: *All exam rooms are under CCTV surveillance during the examination period.*

SECTION A: COMPULSORY

Question One

- a) Differentiate the terms set and intersection. **[4 Marks]**
- b) What do you understand by the concept ‘Venn diagram?’ **[3 marks]**
- c) The following data was derived from Tamu Tamu Kiosk;

Item	Number of orders
Black coffee	150
African tea	640
Uji power	310
Black coffee & African tea	90
Black coffee & Uji power	60
African tea & Uji power	200
All the three items	50

Using a Venn diagram, determine;

- i). Those who ordered Uji power only. **[3 Marks]**
- ii). Those who ordered African tea only. **[3 Marks]**
- iii). Those who ordered Black coffee & African tea but not Uji power. **[3 Marks]**
- iv). Determine the total number of customer orders. **[3 Marks]**
- d) What is a Cartesian plane? **[2 Marks]**
- e) Use substitution method to solve the following: **[5 Marks]**
- $$3x + 2y = 13$$
- $$x - 5y = -7$$
- f) Find the equation of a straight line passing through the following points; **[5 Marks]**
- D (-2, -1) E (-6, -9)
- g) Consider the following consumption and tax functions;
- $$C = 50 + 0.65Y$$
- $$T = \alpha_0 + \alpha_1 Y$$

Determine the level of tax and consumption when $Y = 0$.

[9 marks]

SECTION B: ANSWER ANY THREE QUESTIONS

Question Two

- a) Use the following equation to plot the line on a Cartesian plane;

$$3x - y = 12$$

[8 Marks]

- b) Use elimination method to solve the following system:

$$x + 2y + 3z = 3$$

$$2x + 3y + z = 2$$

$$3x + y + 2z = 7$$

[12 marks]

- c)

Question three

- a) Apply substitution method to solve the following linear equations;

$$3x - 2y + 8z = 9$$

$$-2x + 2y + z = 3$$

$$x + 2y - 3z = 8$$

[10 Marks]

- b) Distinguish between the terms demand and supply.

[2 Marks]

- c) Study the demand and supply function given below:

$$P = 2Q^2 + 10Q + 10$$

$$P = -Q^2 - 15Q + 52$$

Determine the equilibrium price and quantity

[8 marks]

Question Four

- a) Solve the following inequality and illustrate the solution on a number line;

$$8 - 4x \leq 2$$

[5 Marks]

- b) Represent the above inequality in Question 4 (a) on a Cartesian plane.

[5 Marks]

- c) Apply the quadratic formula to solve for x in the following equation;

$$4x^2 + 12x + 9 = 0$$

[10 marks]

Question five

- a) Define the following terms;
- i). Total cost [2 marks]
 - ii). Variable cost [2 marks]
 - iii). Fixed cost [2 marks]
- b) Assume, fixed cost of an item is sh 4 and variable cost is sh 1 per unit while the demand function of the item is $P = 10 - 2Q$.
Obtain the profit function and determine the break-even point. [10 marks]
- c) Describe the general linear equation; $y = mx + c$ [4 marks]