



**SIR ARTHUR LEWIS COMMUNITY COLLEGE
ACADEMIC YEAR (2024/2025) – SEMESTER ONE
END OF SEMESTER EXAMINATION**

COURSE TITLE : MATHEMATICS FOR AGRICULTURE

COURST CODE : MAT124

LECTURER : PETRUS JN FRANCOIS

DATE : Tuesday 17th December 2024

TIME : 9.00 – 11.00 AM

DURATION : 2 HRS

STUDENT ID# :

READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

1. Write your student's ID number on all the work you hand in.
2. This paper consists of TEN (10) questions.
3. Answer ***all*** the questions on the answer sheet provided.
4. Total marks for this paper is 70.
5. Write in BLACK or BLUE pen. (***NO WRITING IN PENCIL***)
6. Show all calculations and working.
7. **Only NON-PROGRAMMABLE calculators are permitted.**
8. Do not use correction fluid.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO

Answer all questions

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

1. Mrs. Thomas grows plantains, bananas and pine apples on her 6-acre farm. Last year she cultivated 2 acres in bananas, 3 acres in plantain and the rest in pine apples.
 - (a) What fraction of the farm was Pine apples? [2 marks]
 - (b) What percentage of the farm was planted in plantain? [2 marks]
 - (c) If this year, she made \$3000 in plantains alone but sold 250 pine apples at an average price of \$10.00, which crop provided her with more money and by how much? [3 marks]
 - (d) Which crop provides more income per acre? [3 marks]
 - (e) Draw a pie chart to illustrate the proportion of the area of the three crops on the farm. [5marks]
2. Given the following: $A = x + 2$ $B = 2x^2 + 5x - 7$ $C = x^3 + 5x^2 + 4x - 4$, find a simplified expression for:
 - (a) $B + C$ [3 marks]
 - (b) $C - B$ [3 marks]
 - (c) AB [5 marks]
 - (d) $C \div A$ by means of synthetic division [5 marks]
3. Factorize the following:
 - (a) $2x - 4$ [3 marks]
 - (b) $3x^2 + 6x$ [3 marks]
 - (c) $ax + ay + bx + by$ [3 marks]
4. Use a calculator to evaluate to (3 significant figures) the following:
 - (a) $\text{Log } 20$ [2 marks]
 - (b) $\text{Log}_e 12$ [3 marks]
 - (c) $\text{Ln } 10$ [2 marks]
5. Evaluate without using a calculator
 - (a) $\text{Log } 30 - \log 3$ [3 marks]
 - (b) $\text{Log}_3 2.7 + \log_3 10$ [3 marks]
6. Solve for x:
 - (a) $3^x = 27$ [2 marks]
 - (b) $5^x = 10$ [3 marks]

7. Solve the pair of equations below by the method of elimination

$$3x + 2y = 8$$

$$4x - 3y = 5$$

8. Solve

(a) $x^2 - 7x + 12 = 0$ (Factorization) [4 marks]

(b) $2x^2 + 5x - 6 = 3$ (Quadratic Formula) [5 marks]

9. Solve the following inequality and use a number line to illustrate your answer:

(a) $3x^2 - 7x - 6 \leq 0$ [3 marks]

(b) $2x^2 - 5x - 3 \geq 0$ [3 marks]

10. Using values of x from -4 to 3 and a scale of 2cm = 1 unit for each axis, draw the graph of $y = -2x^2 + 5x - 3$. [7 marks]

END OF EXAMINATION