KISII UNIVERSITY
UNIVERSITY EXAMINATIONS
FIRST YEAR EXAMINATION FOR THE AWARD OF THE DIPLOMA
DIPLOMA IN AGRICULTURAL AND APPLIED ECONOMICS
FIRST SEMESTER 2022/2023
(SEPTEMBER - DECEMBER, 2022)

AGEC 0110: MATHEMATICS FOR ECONOMIST

STREAM: Y1 S1   **TIME: 2 HOURS**

DAY: TUESDAY, 3:00 P.M – 5:00 P.M   **DATE: 15/12/2022**

INSTRUCTIONS:
1. Do not write anything on this question paper.
2. Answer Question ONE (Compulsory) and any other TWO Questions.

QUESTION ONE

a) With illustration, explain the following terms;
   i.   Variable.   (2marks)
   ii. Constant.   (2marks)
   iii. Parameter.   (2marks)
   iv. Intersection of set.   (2marks)
   v.   Compliment of set.   (2marks)

b) With examples, distinguish between the following pairs of terms
   i.   Exogenous versus endogenous variables.   (4marks)
   ii. Mathematical economics versus econometrics.   (4marks)

c) In a survey of 260 students, the following data were obtain;
   94 students like History, 64 like Maths, 58 like Arts, 28 like Maths and Arts, 26 like History and Maths, 22 like History and Arts and 14 like all the three subjects.

   Required

   i.   How many students could not like any of the subjects?   (4marks)
   ii. How many students like at least one subject?   (4marks)
   iii. How many students like only one subject?   (4marks)

QUESTION TWO

a) Given $A = \begin{bmatrix} 2 & 5 \\ 3 & 4 \end{bmatrix}$

   Obtain an inverse of A. (8marks)

b) With illustration, distinguish between three types of equations. (12marks)

QUESTION THREE

a) Given that A= {1,2,3,4} B= {3,4,5,6,7} C={2,3,5,9}

Find

   i. AUB. (2marks)
   ii. BnC. (2marks)
   iii. Compliment of A . (2marks)
b) (i) solve the equation. (6marks)

   $$2y = -3x + 28$$

   $$y = 3x + 5$$

   (ii) plot the graph of $y = 2x^3 - 5x^2 - 2x + 5$ from x= -2 to x=3 (8marks)

QUESTION FOUR

a) With examples explain three linear equations. (9marks)
b) A company's total profit in '000' over a period is given by the function $17x^2 - 12x - 5x^3$ where x is the number of items produced in hundreds. If it is known that the maximum production possible for the period is 300 items;
   i. Plot the company's profit per unit curve. (2marks)
   ii. Give the profitable range of production. (3marks)
   iii. Maximum profits obtain. (3marks)
   iv. Production level for the maximum profit. (3marks)