
CHUKA



UNIVERSITY

SUPPLEMENTARY / SPECIAL EXAMINATIONS
FIRST YEAR EXAMINATION FOR THE AWARD OF BACHELOR DEGREE IN
ECONOMICS AND STATISTICS, ECONOMICS AND SOCIOLOGY, ECONOMICS
AND MATHEMATICS AND ECONOMICS AND HISTORY.
ECON 131: INTRODUCTION TO MATHEMATICS FOR ECONOMISTS

STREAMS:

TIME: 2

HOURS

DAY/DATE: MONDAY 16/11/2020

11.30 A.M - 1.30 P.M.

INSTRUCTIONS:

- Answer Question One And Any Other Two Questions

QUESTION ONE (30MARKS)

- a. Consider the universal set T and its subsets A, B and C below;

$$T = \{a, b, c, d, e, f\}$$

$$A = \{a, d\}$$

$$B = \{b, c, f\}$$

$$C = \{a, c, e, f\}$$

Find (5mks)

- $A \cup B$
 - $B \cup C$
 - $A \cup B \cup C$
 - $A \cap B \cap C$
- b. Evaluate the following (8mks)
- $3+2$
 -
 -
 -
- c. Expand $(X + Y)^3$ (2Marks)

d. Graph and compute the intercept of the following function (6 Marks)

i. $Y = 4 - 2x$

ii. Consumption C is a function of income Y , given by the following expression;

$$C = 7 + 0.85Y$$

iii. What is the slope of the consumption function? (1 Mark)

iv. Is the function positively or negatively sloped? (2 Marks)

v. What is the level of consumption when $Y = 1$ (2 Marks)

e. You are given the following demand and supply functions for a commodity

P

find the equilibrium price and quantity (4 Marks)

QUESTION TWO(20MKS)

a. Solve the following (4mks)

i. =

ii.

b. Solve the first two equations by factorization and the last two by completing the square

(8 Marks)

i. $8x^2 - 50 = 0$

ii. $X^2 = 20 - X$

iii. $X^2 - 2X - 8 = 0$

iv. $X^2 + \beta X = 0$

c. Find for the following equations (8 Marks)

i.

ii.

iii. ²

iv.

QUESTION THREE (20MARKS)

a. The demand function for some product is

$$P = 16 - 0.4Q$$

Find

- i. Total revenue (TR) function (2 Marks)
- ii. Average revenue (AR) function (2 Marks)
- iii. Marginal revenue (MR) function (2 Marks)

b. Find the points at which critical values for the following functions occur and determine whether the functions attain maximum or minimum at such points (6 Marks)

- i.
- ii.

c. The average revenue and average cost functions for a firm are given as;

Find the level of Q and P that will maximize profits for the firm (6 Marks)

d. Find the points of inflexion for (2 Marks)

QUESTION FOUR (20MARKS)

a. Evaluate the following (8 Marks)

b. Evaluate the product AB of the following pairs of matrices (4 Marks)

c. Solve the following by Cramer's rule (4 Marks)

i. $x_1 + 3x_2 = 3$

$$2x_1 + 4x_2 = 7$$

ii. $3x_1 + x_2 = 6$

$$6x_1 + x_2 = 7$$

d. Highlight the elements of the input -output table (4 Marks)

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