

CHUKA



UNIVERSITY

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**SUPPLEMENTARY/ SPECIAL EXAMINATIONS**

**EXAMINATION FOR THE AWARD OF DEGREE OF  
BACHELOR OF SCIENCE ECONOMICS AND STATISTICS, BACHELOR OF ARTS  
ECONOMICS AND SOCIOLOGY, BACHELOR OF SCIENCE ECONOMICS AND  
MATHEMATICS, BACHALOR OF ARTS ECONOMICS AND HISTORY, BACHELOR  
OF ARTS ECONOMICS AND GEOGRAPHY, BACHELOR OF ARTS GENERAL**

**ECON 131: INTRODUCTION TO MATHEMATICS FOR ECONOMISTS**

**STREAMS: ECON STAT, ECON SOCI, ECON MATH, ECON HIST, ECON GEOG,BA  
GEN**

**TIME: 2 HOURS**

**DAY/DATE: WEDNESDAY 03/02/2021**

**8.30 AM – 10.30 AM**

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**INSTRUCTIONS:**

**ANSWER QUESTION ONE AND ANY OTHER TWO**

**QUESTION ONE**

- a) Distinguish between the following terms giving examples
- Integer and real number
  - Rational and irrational numbers
  - Behavioral and technical functions
  - Endogenous and exogenous variables
  - Descriptive and enumerative methods of set representation. (10 marks)
- b) Expand the following function (5 marks)
- c) Sumville has three newspapers: The chronicles, The express and moon and The scribe. It has been found out that 35% of the town population read The chronicle, 42% read the express and moon, 51% read The scribe. 4% read the chronicle and the express and moon only, 10% read the chronicle and the scribe only, 15% read the express and moon and the scribe only and 7% of the population reads all the three newspapers. Required
- Draw a Venn diagram to represent this information. Label A to represent the chronicle, B to represent the express and moon and C to represent the scribe (6 marks)
  - What percentage of the population doesn't read any of the newspapers? (3 marks)

- c. Find the percentage of the population that reads the chronicle or the express and moon but not the scribe. (4 marks)

d. (2 Marks)

## QUESTION TWO

- a) Mathematical economics use mathematical symbols in stating economic problems and making use of the mathematical theorems for policy formulation on economic conditions. Discuss the significance of mathematical economics. (10 marks)
- b) Find the critical values of the following function and determine whether or not these values give rise to local maxima. If so, what is the maximum value of  $y$ . (5 Marks)
- c) Find the following definite Integrals.
- $\int (x + 3) dx$  (3 Marks)
  - (2 Marks)

## QUESTION THREE

- a) Given the following information of a two commodity market model

$$Q_{d1} = 8 - P_1 + 1/2P_2$$

$$Q_{d1} = 20 + P_1 - P_2$$

$$Q_{s1} = -5 + 3P_1$$

$$Q_{s2} = -16 + 2P_2$$

Use the crammer's rule to determine the equilibrium price and quantity of each market in the economy

(8 Marks)

- a) Given the following Matrix,  
 $P =$

Find the determinant

(6 Marks)

- b) The total cost of producing Unga manufactured by Unga company is given by:

$$TC = 0.067Q - 0.45Q^2 + 1.89Q^3 + 15$$

Required: Find:

- AC
- AVC
- AFC
- TVC
- TFC
- MC

(6 marks)

## QUESTION FOUR

a) Solve by completing the squares  
3

( 6 marks)

a) Discuss the general steps used in solving quadratic equations by factorization. ( 4 marks)

b) Consumption, C is a function of income Y, given the following expression  
 $C = 7 + 0.85Y$

- i. What is the slope of the consumption function? ( 2 marks)
- ii. Is the function positively or negatively sloped? ( 2 marks)
- iii. What is the level of consumption when  $Y = 1$  and  $Y = 10$ ? ( 2 marks)

c) An economy is defined as where ;

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You are required to:

Name the endogenous and exogenous Variables in the model

(2 Marks)

What is the balance of Trade position in the economy when;

- i. (1 Mark)
- ii. (1 Mark)

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