

CHUKA UNIVERSITY
RESIT EXAM MAY 2025
AGEC 313: ECONOMETRICS

Instructions:

- a) Do not write on the question paper.
- b) Answer question ONE and any other THREE questions

QUESTION ONE

- a. Discuss four importance of econometrics **(4 Marks)**
- b. Define autocorrelation **(2 Marks)**
- c. Explain briefly six roles of stochastic term in an econometric model **(6 Marks)**
- d. What will be the interpretation of B_1 in the following equations
 - i. $Y=B_0+B_1X+u$ **(2 Marks)**
 - ii. $Y=B_0+B_1 \log(X)+u$ **(2 Marks)**
 - iii. $\log(Y)=B_0+B_1X+u$ **(2 Marks)**
 - iv. $\log(Y)=B_0+B_1 \log(X)+u$ **(2 Marks)**
- e. List five main assumptions of multiple linear regression **(5 Marks)**

QUESTION TWO

The table below shows the relationship between quantity output of maize (Y) in Kg and nitrogen fertilizer application (X) measured in kilograms for ten farmers in Tharaka Nithi::

Y	198	181	170	179	163	145	167	203	251	145
X	23	26	24	27	27	24	26	22	21	25

- i. Specify an econometric model and estimate the parameters of the model. **(7 Marks)**
- ii. Interpret your results in (i) above. **(2 Marks)**
- iii. Calculate the variance of the slope coefficient. **(3 Marks)**
- iv. Conduct hypotheses test on the slope coefficient at 5% level of significance. **(3 Marks)**

QUESTION THREE

- a) Explain briefly five ways to remedy for multicollinearity **(5 Marks)**
- b) Explain four consequences of autocorrelation **(4 Marks)**
- c) Distinguish between Econometric model and Mathematical model. **(2 Marks)**
- d) Explain four features of a good econometric model. **(4 Marks)**

QUESTION FOUR

An economist wanted to establish the relationship between wealth (w) and consumption (c) and came up with the following intermediate results in real values:

$$\Sigma w = 1345.8 \quad \Sigma c = 1224.1 \quad n = 20 \quad \Sigma w^2 = 92520 \quad \Sigma c^2 = 75969 \quad \Sigma wc = 83826$$

- Specify and estimate the model **(8 Marks)**
- Interpret your results in (a) above **(4 Marks)**
- Determine the coefficient of determination for the estimation above **(3 Marks)**

QUESTION FIVE

- Giving examples, define a dummy variable **(2 Marks)**
- With aid of a diagram, illustrate the effect of gender dummy in the following model

$$\text{Income} = B_0 + B_1 \text{Experience} + B_2 \text{Gender}$$

Where Income is in KES, Experience is in years and Gender (1=Male, 0=Female)

(5 Marks)
- Differentiate between the null and alternative hypothesis **(4 marks)**
- List four solutions to autocorrelation **(4 Marks)**

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