LAIKIPIA UNIVERSITY

UNIVERSITY EXAMINATIONS

1ST SEMESTER 2023/2024 ACADEMIC YEAR

THIRD YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN ECONOMICS & STATISTICS AND ECONOMICS & SOCIOLOGY

ECON 311: ECONOMETRICS I

STREAM: ***TIME: 2 HRS***

DAY: WEDNESDAY [14.30-16.30 P.M] ***DATE: 13/12/2023***

THIS QUESTION PAPER CONSISTS OF FOUR (4) PAGES

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Instructions

1. Answer question **ONE** and any other **TWO** questions.
2. Question **ONE** is compulsory and carries **30** marks
3. All other questions carry **20** marks each.
4. Clearly show all your calculations.

QUESTION ONE

The following table shows the quantity supplied (Y) in thousands and the price (X) in hundreds of a commodity.

Year	Quantity Supplied	Price '00
2001	2	1
2002	2	2
2003	2	3
2004	1	4
2005	3	5
2006	5	6
2007	6	7
2008	6	8
2009	10	9
2010	10	10
2011	10	11
2012	12	12
2013	15	13
2014	10	14
2015	11	15

a) Compute the correlation coefficient and interpret the result. **(6 Marks)**

b) Compute Ordinary Least Squares estimates for the regression equation. **(6 Marks)**

c) Interpret the result in part (b). **(4 Marks)**
d) Test for the presence of autocorrelation at 5% level of significance. **(10 Marks)**
e) Interpret the result in part (d). **(4 Marks)**

QUESTION TWO

a) Explain **THREE** types of data that is used in estimating regression model? **(6 Marks)**

b) Explain **SEVEN** assumptions of ordinary least square regression model. **(14 Marks)**

QUESTION THREE

Assume that the following data have been calculated from a regression of Y on a single variable X over 22 observations.

$$\sum xy = 830102 \quad \sum x^2 = 3919654 \quad \bar{X} = 416.5 \quad \bar{Y} = 86.65 \quad T = 22 \quad RSS = 130.6$$

a) Determine the appropriate values of the coefficient estimates. **(6 Marks)**
b) Interpret the result. **(3 Marks)**
c) Compute the *t*-value for the X variable. **(6 Marks)**
d) Test the hypothesis at 5% level of significance. **(5 Marks)**

QUESTION FOUR

a) Explain **FIVE** methods of testing for heteroscedasticity in data. **(10 Marks)**

b) Use matrix approach to derive the parameters of a bivariate regression model. **(4 Marks)**

c) Explain the **THREE** properties of least squares estimators. **(6 Marks)**

QUESTION FIVE

Suppose a researcher estimated a production function and got the following results.

$$\ln Q = 0.50 + 0.76 \ln L + 0.19 \ln K$$

t = (4.78) (1.07) (1.36) $R^2 = 0.969$

Where Q is output, L is labour and K is capital.

a) What is the possible problem with the result? Give reasons for your answer. **(6 Marks)**

b) Explain **SIX** consequences of the problem in (a). **(6 Marks)**

c) Explain **FOUR** remedial measures for the problem in (a). **(8 Marks)**