

CHUKA



UNIVERSITY

UNIVERSITY SUPPLEMENTARY/SPECIAL EXAMINATIONS.

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN
AGRIBUSINESS MANAGEMENT & AGRICULTURAL ECONOMICS.

AGEC 313: ECONOMETRICS

STREAMS:

TIME: 2 HOURS

DAY/DATE: THURSDAY 26/07/2018

8.30 A.M - 10.30 A.M

INSTRUCTIONS:

- Answer QUESTION ONE and any other TWO Questions.

1. (a) Explain how the following lag model works.

(i) Distributed lag models.

[5 Marks]

(ii) Koyck's lag models

[5 Marks]

(iii) Almon lag models.

[5

Marks]

(b) Consider the following data obtained from Company W

W	2	4	5	3	8	6
Y	20	35	42	30	60	50

(i) Regress X on Y and test the significance of B_0 and B_1 .

[8 Marks]

(ii) Compute the coefficient of determination. (R^2)

[4 Marks]

(c) Explain the remedies to autocorrelation problem. [3 Marks]

QUESTION TWO

2. (a) The output of company A depends on the two types of inputs 1 and input 2 as shown below;

Output	Input 1	Input 2
40	10	12
60	20	21
64	20	22

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80	25	30
72	18	25
50	17	10
68	21	20
90	28	30

Required:

- (i) Compute the regression equation $Y=B_0 + B_1X_1 + B_2X_2$ [6 Marks]
- (ii) Estimate the standard errors of B_1 and B_2 . [4 Marks]
- (iii) Test the statistical significance of B_1 and B_2 . [4 Marks]
- (iv) Predict the value of Y where $X_1 = 100$ and $X_2 = 150$ [1 Mark]

(b) Given that $Y=B_0 + B_1 X$, prove that
$$B_1 = \frac{n \sum xy - \sum x \sum y}{n \sum x^2 - (\sum x)^2}$$

[5 Marks]

QUESTION THREE

- 3. (a) Explain the properties of OLS estimator. [4 Marks]
- (b) Explain the methodology in which econometric proceed. [8 Marks]
- (c) Consider the following estimated model;
 - $Y = 2.3 + 1.4x$
 - s.e (1.1) (0.4)
 - $n = 52, R^2 = 0.7$
 - Condition index = 30; Dw = 1.8
 - (i) Test the statistical significance of B_1 at 5% significance level. [5 Marks]
 - (ii) Determine whether there is or no multicollinearity. [3 Marks]

QUESTION FOUR

(a) Consider the following behavioral equations:

$$M_t = \alpha_0 + \alpha_1 Y_t + M_{t-1}$$

$$Y_t = B_0 + B_1 M_t + B_2 t + M_{2t}$$

Calculate the reduced form equations. [8 Marks]

(b) Differentiate between structural equations and reduced form equations. [4 Marks]

(c) Explain 8 assumption of classical linear regression. [8 Marks]

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