

**MURANG’A UNIVERSITY OF TECHNOLOGY**

**BACHELOR OF BUSINESS ADMINSTRATION WITH IT**

**ACADEMIC YEAR 2016/2017**

**YEAR THREE SEMESTER I**

**SAS 313: PRINCIPLES OF ECONOMETRICS**

INSTRUCTION: Answer Question **One** and any other **Two** questions.

**QUESTION ONE**

(a) Describe sources of an econometric data (5 marks).

(b) (i) Outline the procedure of a two-sided t-test for testing the coefficients of an econometric model. Assume that you have a model of the form: , where and are constants, Y is a dependent variable and ’s are independent variables ( 4 marks).

(ii) List three limitations of a t-test (3 marks).

(c ) Given a generalized linear econometric model of the form: ; determine:

1. and
2. The distribution of (3marks)

(i) Describe any three methods used in modern econometrics (6 marks).

(ii) , ; is a multivariate form of a regression model. Find and (5 marks)

1. Define the term Heteroscedasity (2 marks)
2. List two consequences of heteroskedasity on least squares estimators (2mks)

**QUESTION TWO**

Given the following data, you are required to find:

(a) and

(b) and ,the and the slope of the linear econometric model of the form:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 64 | 81 | 100 | 121 | 144 | 169 | 196 | 225 |
|  | 54 | 67 | 53 | 99 | 118 | 138 | 159 | 183 |

(10 marks)

**QUESTION THREE**

Consider the following equation with the estimated standard errors in parentheses

(0.080) (0.072) (0.658)

Where wages and salaries per employee in year t

the price level at year t

the unemployment rate in year t

(a) Develop a one –sided t-test to test your own hypotheses for the estimated coefficients of and

(b) Discuss the theoretical validity of and how your opinion of that validity to this equation might be changed by your answer in (a) above. With a reason explain whether should be dropped from the equation.

**QUESTION FOUR**

(a) What do we mean by first-order autoregressive model?(2mks)

(b) Given a simple econometric model of the form: , where . Show that:

(i) (3 marks)

(ii) (5 marks)

(c)Supposing where ’s are known, show that if is the weighted least squares (WLS) estimator of and is the ordinary least squares(OLS) estimator of ,then

**QUESTION FIVE**

(a) Describe three economic situations where lag operators can be applied (6mks)

b) Given an econometric model, where D(L) is a polynomial of degree s in its lag operator ,i.e.

, show that the mean lag is given by;

(3marks)

(c) When there is a distributed lag on both and , we can have the following relationship

where and and . Prove that:

1. (5mks)

1. (2mks)
2. The mean lag ( 3 mks)