MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2013/2014

SECOND YEAR SECOND SEMESTER EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRIBUSINESS MANAGEMENT WITH INFORMATION TECHNOLOGY

(MAIN CAMPUS

AAB 203: ECONOMETRICS

Date: *10th April, 2014* ***Time:*** *8.30 – 10.45am*

INSTRUCTIONS:

- This paper consists of TWO sections. Answer ALL the questions in Section A and ANY ONE QUESTION in Section B.
- Marks for each question are indicated in brackets against.

1. Carefully **READ AND FOLLOW THE INSTRUCTIONS** contained in the answer booklet(s) you have been provided with.
2. This paper consists of **TWO** sections. Answer **ALL** thequestions in Section A and any **ONE** question in Section B.
3. Marks for each question are indicated in brackets against

SECTION A (COMPULSARY)

1. Table 1 gives varied quantities supplied of a commodity, Y, and corresponding prices, X, holding everything else constant.

N	1	2	3	4	5	6	7	8
Y	12	14	10	13	17	12	11	15
X	5	11	7	8	11	7	6	9

a. Estimate the regression equation Y on X (10 mks)

b. Test for statistical significance of the parameter estimates at the 5% level of significance (6 mks)

c. Find R^2 and report all the previous results in a standard summary form (4 mks)

d. Predict Y and calculate a 95% confidence or prediction interval for X=10 (5 mks)

2. a.)The usefulness of classical regression model (OLS) as analytical tool in empirical research depends on various assumption about the independent variables and the error term. State each of the five assumptions of the classical regression model (OLS) and give an intuitive explanation of the meaning and need for each of them. (10 mks)

   b.) Define the term "heteroscedasticity" as used in Econometrics(2 mks)

   c.) With aid of figure, show the various forms of heteroscedastic disturbance (3mks)

SECTION B (Answer ONE question)

3. Suppose that from 24 yearly observations on the quantity demand of a commodity in kilograms per year Y, its price in dollars X_1, consumer's income in thousands of dollars X_2, and the price of a substitute commodity in dollars X_3, the following estimated regression is obtained, where thenumbers in parentheses represent standard errors:

$$\hat{Y} = 13 - 7X_1 + 2.4X_2 - 4X_3$$

$$(2) \quad (0.8) \quad (18)$$

a.) Indicate whether the signs of the parameters conform to those predicted by demand theory. (4 mks)

b.) Are the estimated slope parameters significant at the 5% level? (4mks)

c.) Find R^2, if $\sum y^2=40$, $\sum yx_1=10$, $\sum yx_2=45$ (where small letters indicate deviation from the mean (6 mks)

d.)Find $\overline{R^2}$ (4 mks)

e.)Is R^2 significantly different from zero at the 5% level? (4 mks)

f.)Find the standard error of theregression. (4mks)

g.)Find the coefficient of price and income elasticity of demand at the means, given

$\overline{Y} = 32 \quad \overline{X_1} = 8 \quad and \quad \overline{X_2} = 16$ (4 mks)

4. a. Table 2 below shows the marks scored by students of Agribusiness in Maseno University in Econometrics and Statistics.

Reg. No of students	1	2	3	4	5
Marks in Econometrics (X)	48	35	17	23	47
Marks in Statistics (Y)	45	20	40	25	45

(i) Calculate Karl Pearson's Coefficient of correlation from data above (13 mks)

(ii) Interpret the results above (2 mks)

b. The following two equations represent a simple macro model:

$R_t = a_o + a_1 M_t + a_2 Y_t + u_{1t}$

$Y_t = b_o + b_1 R_t + u_{2t}$

where R is the interest rate, M is the money supply and Y is the income

(i) Why is this, a simultaneous –equation model (3 mks)

(ii) Which are the endogenous and exogenous variable (3 mks)

(iii) Why would estimation of the R and Y equation by Ordinary Least Squares (OLS) give biased and inconsistent parameter estimates (2 mks)

(iv) Find the reduced form of the model (4 mks)

(v) Is the model under identified, over identified, or just identified and why (3 mks)