(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS 2020/2021 ACADEMIC YEAR

FOURTH YEAR 2ND ST SEMESTER MAIN EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURAL ECONOMICS & RESOURCE MANAGEMENT

COURSE CODE: IAE 485
COURSE TITLE: ECONOMETRICS

DATE: 13TH OCTOBER 2021   **TIME:** 9 – 11 AM

INSTRUCTIONS TO CANDIDATES

Answer Question One and any other two (2) Questions.

TIME: 2 Hours

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Q1.

The following data relates to consumption(C) and income (Y) as follows for 12 individuals

C	114	118	126	130	136	140	148	156	160	164	170	178
Y	102	106	108	110	122	124	128	130	142	148	150	154

Required

i) Using regression analysis technique, determine the intercept and and slope of the consumption function **(6 marks)**

ii) Write down the consumption equation in the form of $\hat{Y}_i = \hat{b}0 + \hat{b}1Xi$ **(4 marks)**

iii) Calculate the coefficient of determination **(5 marks)**

iv) Determine the variance of the estimates **(5 marks)**

v) Calculate the standard errors of the estimates **(5 marks)**

vi) Given a reduction in income by 50 units, how many units will be consumed? Interpret your answer **(5 marks)**

Q2.

a) Explain the linear regression Gauss-Markov assumptions **(10 Marks)**

b) Given the following estimated model below with its standard errors enclosed in the brackets,

$\hat{Y}_i = 2.24 + 0.2Xi$

(2.29)   (0.0233)

Required

Test whether the parameter estimates are significantly different from zero **(10 Marks)**

Q3.

The following data relates to students' score in two subjects namely: - statistics and econometrics.

Statistics   78   89   99   60   59   79   68   61

Econometrics 125 137 156 112 107 136 123 108

Using an assumed mean of 69 marks in statistics and 112 marks in Econometrics, answer the following questions.

    i)   Calculate correlation coefficient   **(5 marks)**

    ii)   calculate the probable error   **(5 marks)**

    iii)   Determine the limits for the correlation coefficient   **(5 marks)**

    iv)   Determine the standard error of the correlation coefficient   **(5 marks)**

Q4.

    a) Explain the sources of errors in econometrics   **(10marks)**

    b) Given the following model

Food security=4.27+0.2 Age+0.03 Gender+0.002 off farm income+0.04 log Age

Required

    i)   Identify the model   **(2 marks)**

    ii)   Interpret the effect of age on food security   **(4 marks)**

    iii)   Interpret the effect of gender on food security   **(4 marks)**

Q5.

Write short notes on the following models

    a) Log log model   **(2 marks)**

    b) Log linear model   **(3 marks)**

    c) Linear log model   **(3 marks)**

    d) A researcher wants to estimate how mothers influence the earnings of their daughters and collects data on wage of 100 women and data on their mother's education, IQ, and reading habits. She obtains the following results (the standard errors are in parentheses below the coefficients). Mothedu, IQ,books refer to an individual's mothers logged education level score on a standard IQ test and logged number of books they have read respectively.

Lnwage=1.58+ 1.24mothedu+1.60IQ+1.19books

      (0.54) (0.23)   (0.56) (1.09)

      N=100, R^2=0.42   F (3.96) =18.9

Required

i) What is the interpretation on the coefficient of books? **(2 marks)**

ii) Are each of the variables individually significant at 95%confidence level? **(4 marks)**

iii) It turns out that there is a strong positive correlation between books and mothedu, is this a problem? **(2 marks)**

iv) What would happen to the coefficient of mothedu if books was omitted from the regression? **(4 marks)**