(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS

2017/2018 ACADEMIC YEAR

FOURTH YEAR 1st SEMESTER

MAIN EXAMINATION

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

COURSE CODE: **IAE 485**

COURSE TITLE: **ECONOMETRIC**

DATE: 7TH AUGUST 2018 **TIME: 9 – 11 AM**

INSTRUCTIONS TO CANDIDATES

Answer **Question 1** and any other two (2) Questions.

QUESTION ONE

a) Distinguish the following terms following terms as used econometrics:
   i. Economic theory and econometrics (2mks)
   ii. Multicollinearity and autocorrelation (2mks)
   iii. Time series and cross section data (2mks)
   iv. Population regression and sample regression functions (2mks)
   v. Spearman and Pearson correlation coefficients (2mks)
b) Derive the normal equations which are used in simple regression analysis (6mks)
c) Explain the role of the disturbance term in econometrics (4mks)
d) Clearly discuss what is contained in the following steps used in an econometric analysis:
   i. Specification (6mks)
   ii. Estimation (4mks)

QUESTION TWO

The following data refers to weekly sales Y and weekly advertising expenditure X_2 and the mean weekly income of customers X_3.

Y	200	236	262	261	322	280	308	347	397	382
X_2	3	4	16	13	20	23	23	28	33	37
X_3	21	22	25	26	30	31	34	34	38	39

i) Regress Y on X_2 and X_3 and interpret the results of your regression model (10mks)
ii) Calculate the coefficient of determination and interpret your answer. What is adjusted R squared? (5mks)
iii) Create 95% confidence intervals for the slope parameters and state whether the slope parameters are significant or not. (5mks)

QUESTION TWO

a) Clearly discuss three causes, three consequences and three solutions to the problem of heteroscedasticity in a model (16mks)
b) Explain four ways of detecting presence of multicollinearity in a regression model. (4mks)

QUESTION THREE

I. Explain six assumptions made when using the ordinary least squares method for estimating a multiple regression model. (6mks)
II. Study the following information on X and Y:

X	1	2	3	4	5	6	7
Y	2	4	7	6	5	6	5

a) Regress Y on X, and find the standard error of error term, OLS parameters, t statistics, the adjusted R squared and complete regression model (10mks)

b) Obtain the Pearson correlation coefficient between X and Y (4mks)

QUESTION FOUR

i) An ANOVA table for a certain three variable regression (Y, X_1, and X_2),and 20 observations are given as follows:

Source of variation	Sum of squares	d.f.	Mean sum of squares (MSS)
Due to regression (ESS)	300	a	B
Due to residuals (RSS)	c	d	E
Total (TSS)	400	f	F statistic = g

Find the values for a, b, c, d, e, f, and g. What can you conclude about the overall significance of the model? (10mks)

ii) Explain the procedure of how one can conduct hypothesis testing using test of significance approach (10mks)