MACHAKOS UNIVERSITY

University Examinations for 2018/2019 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF ECONOMICS

THIRD YEAR SUPPLEMENTARY EXAMINATION

BACHELOR OF (SCIENCE STATISTICS & PROGRAMMING)

BACHELOR OF ECONOMICS AND STATISTICS

BACHELOR OF ECONOMICS AND FINANCE

BACHELOR OF ECONOMICS AND FINANCE

BACHELOR OF ECONOMICS

EES 400: FUNDAMENTALS OF ECONOMETRICS I

DATE: **TIME:**

INSTRUCTIONS: Answer Question ONE and any other TWO questions

QUESTION ONE (COMPULSORY) (30 MARKS)

a)   Discuss clearly the assumptions underlying multiple linear regression models

(10 marks)

b)   Mike has been supplying lemons to Ankara Hotel for several years now. He has commissioned to analyze the supply behaviour, relating sales to prices and costs of production. He has provided the following information:

Source of Variation	Sum of Squares	Degrees of freedom	Mean Sum of Squares
Due to regression (ESS)	23.08	-	-
Due to residual (RSS)	-		-
Total Variation (TSS)	23.20	4	

   i)   Find the number of years in question   (2 marks)

   ii)   Compute RSS   (3 marks)

   iii)   Find the degrees of freedom for ESS & RSS   (2 marks)

   iv)   Find the MSS for ESS and RSS   (2 marks)

v) Find the R2 and adjusted R2   (6marks)

vi) Do prices and production costs jointly affect supply? Test at the 5% level of significance.   (5 marks)

QUESTION TWO (20 MARKS)

a)   Distinguish clearly between economic theory, econometrics and economic statistics within the context of the scope of econometrics   (6 marks)

b)   Briefly discuss the methodology of econometrics.   (8 marks)

c)   Discuss the Gauss-Markov Theorem   (6 marks)

QUESTION THREE (20 MARKS)

A consumption function for households in a given neighbourhood is required for future forecasting of supply. A researcher has obtained the following data from a sample of such households.

Variable (Kshs.'000)	1	2	3	4	5	6	7
Consumption	2	4	5	3	6	1	7
Disposable Income	7	12	15	10	20	5	25

i)   Determine the consumption function and interpret your results   (6 marks)

ii)   Predict the level of consumption for each level of disposable income (3 marks)

iii)   Calculate the residual consumption values for each level of income   (3 marks)

iv)   Test whether the marginal propensity to consume is different from zero assuming a 5% level of significance   (8 marks)

QUESTION FOUR (20 MARKS)

a)   Distinguish clearly between Multicollinearity, Heteroscedasticity and Autocorrelation   (6 marks)

b)   What are the consequences of heteroscedasticity in a regression model?   (4 marks)

c)   Derive the Durbin-Watson statistic and explain how one can use it to test for no correlation, perfect positive and negative correlation   (10 marks)

QUESTION FIVE (20 MARKS)

a)   Discuss the nature of data used in econometric analysis   (6 marks)

b)   The following data relates to prices of oranges in hundreds of Kenya Shillings per kilogram from 10 different markets

Price 1	6	5	8	8	7	6	10	4	9	7
Price 2	8	7	7	10	5	8	10	6	8	6

    i)   Compute the simple linear correlation coefficient between the two sets of prices and interpret your results   (6 marks)

    ii) Compute the Spearman's rank correlation coefficient between the two sets of prices and interpret your results   (6 marks)

    iii) Compute the coefficient of determination for the two sets of prices and interpret your results   (2 marks)