MACHAKOS UNIVERSITY

END OF SEMESTER EXAMS FIRST SEMESTER 2019

BACHELOR OF COMMERCE,FOURTH YEAR

BMS 404: ECONOMETRIC MODELING AND METHODS

DATE: 2019 **TIME:**

INSTRUCTIONS: Answer Question ONE and any other TWO questions

QUESTION ONE (COMPULSORY 30 MARKS)

a) With the help off appropriate illustrations explain four types of economic models (10 marks)

b) The national income model for an economy is represented as follows (units are in millions of shillings)

$Y = C + I + G + X - M$	where: Y = National income
$C = 100 + 0.8Y$	C = consumption expenditure
$I = 120$	I = Investment expenditure
$G = 400$	G = government expenditure
$X = 300$	X = exports
$M = 200 + 0.2Y$	M = Imports

a) State the country's marginal propensity to save (MPS) and give its economic meaning (2 Marks)

b) Find the equilibrium values of the endogenous variables (Y, C and M) in the model (8 Marks)

c) Explain five critical features of an economic model

(10 marks)

QUESTION TWO (20 MARKS)

a) Discuss the various steps of econometric modelling as a scientific approach of solving economic problems through creation of appropriate models that are based on economic theory

(10 marks)

b) Explain five uses of economic models

(10 marks)

QUESTION THREE (20 MARKS)

A research firm intends to conduct a market survey to determine factors influencing x demand for off campus hostels among students. The firm will have to build an appropriate economic model to estimate the demand.

a) Explain five elements of such an economic model

(10 marks)

b) Explain how the firm can evaluate the quality of regression estimates of the model.

(10 marks)

QUESTION FOUR (20 MARKS)

.A researcher wanted to find out the relationship between households' monthly incomes and their expenditures on food. He sampled ten households and recorded their monthly incomes and expenditures on food in thousands of Kenya Shillings as follows:

Households	A	B	C	D	E	F	G	H	I	J
Incomes (X)	85	52	72	62	48	68	45	76	55	42
Expenditures (Y)	45	25	35	30	22	38	24	37	28	20

i) Using regression analysis, obtain the expenditure function

(10 marks)

ii) Compute the coefficient of determination and interpret it.

(5 marks)

iii) Estimate the expenditure on food for a household whose monthly income is 90, 000 Kenya Shillings

(5 marks)

QUESTION FIVE (20MARKS)

Consider the following set of results generated in STATA which concerns an analysis of the relationship among poverty (i.e. proportion of population below the poverty line), age-dependency ratio (agedepratio), average household size (hhsize) and proportion of households with a member with a university degree (graduate).

Correlation results: pwcorr poverty agedepratio hhsize graduate

	Poverty	agedepratio	hhsize	graduate
Poverty	1.0000			
Agedepratio	0.6174*	1.0000		
Hhsize	0.6050*	0.4390*	1.0000	
Graduate	-0.6883*	-0.7870*	-0.5154*	1.0000

Multiple regression results: reg poverty agedepratio hhsize graduate

Source	SS	df	MS	Number of obs	=	44
				F(3, 40)	=	17.67
Model	6298.71728	3	2099.57243	Prob > F	=	0.0000
Residual	4753.15268	40	118.828817	R-squared	=	0.5699
				Adj R-squared	=	0.5377
Total	11051.87	43	257.020232	Root MSE	=	10.901
Poverty	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]	
agedepratio	0.1516111	0.1503072	1.01	0.319	-0.152171	0.4553932
hhsize	6.187152	2.252183	2.75	0.009	1.63532	10.73898
graduate	-1.77889	0.8203311	-2.17	-2.17	-3.436841	-.1209389
cons	20.62111	25.56289	0.81	0.425	-31.04341	72.28564

Required:

i) Write down the econometric and the fitted regression equations

(2 Marks)

ii) Interpret the correlation coefficients among the variables

(4 Marks)

iii) Discuss the regression results above in terms of the economic and statistical significance of the estimated coefficients of the model

(10 Marks)

iv) Evaluate the model on the basis of the F-test and R-squared. For each test, first state the hypothesis being tested

(4 Marks)