MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF ECONOMICS

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF ECONOMICS AND STATISTICS

BACHELOR OF ECONOMICS

BMS 404: ECONOMETRIC MODELING AND METHODS

DATE: 21/1/2021   **TIME: 2.00-4.00 PM**

INSTRUCTIONS:

Answer Question ONE and any other TWO questions

QUESTION ONE (30 MARKS)

a)   Briefly explain the following terms

      i)   Econometric modelling

      ii)   Model validity

      iii)   Technical function   (6 marks)

b)   State two reasons why mathematical models are superior to graphical models   (2 marks)

c)   Highlight six advantages of simulation   (6 marks)

d)   The following table shows the amounts in thousands of units of a certain commodity purchased at various prices in Kenya shillings over a period of ten months in a certain market.

Amount	54	58	61	69	72	81	88	99	118	194
Price per unit	61	54	50	43	38	36	28	23	19	10

      i)   Estimate and interpret the linear demand function   (6 marks)

      ii)   Find the price elasticity of demand at a price of KShs 65 per unit of the commodity

                                         (2 marks)

      iii)   Evaluate the above-estimated function on the basis of:

            1.   The available economic theory   (4 marks)

2. Statistical criteria R^2 (4 marks)

QUESTION TWO (20 MARKS)

a) Briefly explain five critical features of an economic model (8 marks)

b) The National Income model for an economy is described below (units are US $ millions)

$Y = C + I + G + X - M$ $C = 332 + 0.68Y$ $G = 770$

$I = 244 + 0.16Y$ $M = 392 + 0.18Y$ $X = 950$

Where: Y = National Income; C = Consumption Expenditure; I = Investment Expenditure; G = Government Spending; X = Exports; and M = Imports

i) State the endogenous and exogenous variables in the model (5 marks)

ii) Find the equilibrium values of the country's National Income and Net Exports. Is the country a net importer or net exporter? Why? (7 marks)

QUESTION THREE (20 MARKS)

A research firm intends to conduct a survey to determine the factors influencing the sales of their farm produce in a local market. The firm will have to build an appropriate economic model to estimate the sales.

a) Briefly explain the steps that should be followed to develop this economic model (10 marks)

b) Explain five criteria for judging the validity of such a model (5 marks)

c) Describe five uses of such an economic model (5 marks)

QUESTION FOUR (20MARKS)

a) A researcher wanted to find out the relationship between firms' monthly sales of cars (S) and their expenditure on advertisement (A). He sampled ten car selling firms and obtained the following results of their monthly sales and expenditure on advertisement in thousands of Kenya Shillings as follows:

$\Sigma A = 605$ $\Sigma S = 304$ $\Sigma AS = 19,417$ $\Sigma A^2 = 38,475$ $\Sigma S^2 = 9832$

i) Using regression analysis, obtain the sales function (10 marks)

ii) Compute the coefficient of determination and interpret it. (3 marks)

iii) Estimate the expenditure on advertisement for a firm whose monthly sales is 90 cars (3 marks)

b) Briefly explain four reasons why abstraction of reality is necessary in econometric modelling (4 marks)

QUESTION FIVE   (20 MARKS)

a) Briefly explain four types of economic models (8 marks)

b) Explain the procedure of econometric modelling that most investigators commonly follow as standard method for applied regression analysis (12 marks)