CHUKA   **UNIVERSITY**

COLLEGE

UNIVERSITY EXAMINATIONS

THIRD YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF AGRIBUSINESS MANAGEMENT

AGEC 313: ECONOMETRICS

STREAMS: B.AGBM Y3S2   **TIME: 2 HOURS**

DAY/DATE: MONDAY 2/4/2012   **11.30 A.M. -1.30 P.M.**

INSTRUCTIONS:

Answer Question 1 AND ANY OTHER 2 QUESTIONS.
Start each question on a new page.
Do not write on the question paper.

1. Consider the following hypothetical data on weekly consumption expenditure as a function of weekly family income.

Weekly family income	80	100	120	140	160	180	200	220	240	260
Weekly family consumption	70	65	90	95	110	115	120	140	155	150

(a) Showing your understanding of the terms, indicate the dependent and independent variables in the data above.   [2 marks]

(b) Using the method of least squares, determine the equation of the regression line of Y on X and give an interpretation of the coefficients.   [8 marks]

(c) Compute the variance and standard errors of the β_0 and β_1 estimates.   [8 marks]

(d) Compute the correlation coefficient and the coefficient of determination for the model and give their interpretations.   [8 marks]Type equation here.

(e) Draw a well labeled scatter plot numerically showing the β_0 and β_1 on the graph. Why would you expect most observed values of Y not to fall exactly on a straight line?
                                                                          [4 marks]

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2. The most commonly used regression line is the *least squares* regression line.

    (a) Why is it called the *least squares* regression line?   [4 marks]

    (b) Why is it necessary to use one regression line for prediction of Y from X, and another line for prediction of X from Y?   [4 marks]

    (c) Does the regression of Y on X and the regression of X on Y ever produce the same regression line? If so, under what circumstances?   [4 marks]

    (d) Explain the assumptions of the *simple linear regression* model.   [8 marks]

3. What is your understanding of the following terms as used in econometrics?

    (a) Exogenous variable
    (b) Multicollinearity
    (c) Simultaneous equation bias
    (d) Reduced form equations
    (e) Heteroscedasticity
    (f) Autocorrelation   [20 marks]

4. Consider the following two structural equations representing a simple demand-supply model:

$$\text{Demand:} \quad Q_t = a_0 + a_1 p_t + a_2 Y_t + \mu_{1t} \quad a_1 < 0 \text{ and } a_2 > 0$$
$$\text{Supply:} \quad Q_t = b_0 + b_1 p_t + \mu_{2t} \quad\quad\quad b_1 > 0$$

    (a) With definition of the same, determine if the demand and/or supply function is exactly identified, over-identified, or under-identified.

    (b) Why is this a simultaneous equation model?

    (c) Which are the endogenous and exogenous variables of the system?

    (d) Why would the estimation of the demand and supply function by OLS give biased and inconsistent parameters estimate?   [20 marks]