EASTERN UNIVERSITY, SRI LANKA

FOURTH YEAR SECOND SEMESTER EXAMINATION IN AGRICULTURE – 2008/2009

AEC 4105 – BASIC ECONOMETRICS

Answer ALL questions

Time: Two hour (02)

01)

a) Define the following variables:

i) Dependent variable

ii) Independent variable

b) Define the following assumptions of the multiple regression model:

i) Heteroscedasticity

ii) Autocorrelation

iii) Normality

02)

a) list three different applicable examples where quantitative methods are applied in economics.

b) A researcher has 100 observations of Y, X_1, X_2 and X_3. She uses MLR (Multiple Linear Regressions) to create a dependent factor of Y using X_1, X_2 and X_3 as predictors. The regression equation is $Y = 22.0 - 2.04\ X_1 + 0.3\ X_2 + 0.78\ X_3$. The researcher now notices that the first number in X_3 should have been 16 instead of 6, so he changes only that number and re-fits the model. Now the regression equation is $Y = 22 - 2.04\ X_1 + 3.09\ X_2 - 0.008\ X_3$. The researcher assumed MLR assumption violation behind this data set by looking at the two results.

Answer the following:

i) What may be the cause/violation of this data set?

ii) Comment on the properties of the estimators of the above models?

iii) Give one reason for the above violation in regression models?

iv) How this researcher will handle/overcome the above situation?

03) Using the SPSS output tables for a defined analysis given below, answer the following:

a) Name the analysis done to generate this output,

b) Interpret the results obtained.

ANOVA (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	191747559	1	19174755959	48.302	0.000(a)
		599.768		9.768		
	Residual	623253814	157	3969769518.2		
		359.232		12		
	Total	815001373	158			
		959.001				

a Predictors: (Constant), AGLAND

b Dependent Variable: farm income

Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3870.379	9976.521		0.388	0.699
	AGLAND	4831.818	695.230	.485	6.950	.000

a Dependent Variable: farm income

04)

a) The output table for a multiple regression analysis is given below. Answer the following questions based on the results.

Independent variables	Coefficients	Standard error	t-value	Sig.
Education of household head	0.022*	0.011	1.992	0.049
Age of household head	-0.003	0.004	-0.638	0.525
Young is to adult ratio	-0.063	0.047	-1.337	0.184
Diversity index	0.013	0.022	0.608	0.545
Sex of household	0.241*	0.079	3.069	0.003
Constant	3.515*	0.262	13.42	0.000

Number of observations: 97, R-Square: .344 (Prob>F), Adjusted R-Square: .300

Regression mean square > residual mean square (.838 > .107)

Dependent variable: Household income

*Significant at 5% level (P< 0.05)

(Note: Coding given for sex of household head during data entry female: 0, male: 1)

I. Interpret the R^2 value of this output.

II. Write down the estimated equation for the above output.

III. Interpret the relationship between the dependent and predictors of this output.