

11 OCT 2014

EASTERN UNIVERSITY, SRI LANKA

FOURTH YEAR FIRST SEMESTER EXAMINATION IN AGRICULTURE – 2011/2012

AEC 4105 – BASIC ECONOMETRICS

Answer ALL Questions

Time allowed: 02 hours

01)

- a. Write down real **examples** for **simple** and **multiple regression models** using mathematical equations.
- b. List the 5 **classical assumptions** of OLS (Ordinary Least Square) method. How do you diagnose the assumption of **multicollinearity**?
- c. What do you understand by **linearity in parameter** and **linearity in variables**? Which is important in terms of Ordinary Least Square Method (OLS)?

02)

- i) Proof that in a given population “sum of the squared residuals is some function of the estimators  $\beta_1$  and  $\beta_2$ ” in Ordinary Least Square (OLS) method of estimation (show least square criterion)?
- ii) Rani wants to find the determinants of non-farm income. She ran a linear regression model and the results are shown below.

Determinants of non-farm income: OLS regression results		
Independent variables	Coefficient	Sig.
Female head of household	0.267	0.00
Dependency ratio	0.394	0.01
Distance to market	-0.002	0.02
Coastal region	0.580	0.00
Fruits and vegetables acreage	-0.008	0.03
Constant	10.294	0.00

( $P < 0.05$ ), Dependent Variable= Non-farm income

- iii) Write down the estimated regression model for above results.
- iv) Explain the effect of all independent variables on non-farm income.

03)

Write Short Notes on the following:

- i) Assumption of Homoscedasticity in multiple regression
- ii) F-test to assess joint significance
- iii) Co-efficient of determination( $R^2$ )

04)

- i) List the properties of estimators' obtained from **OLS (Ordinary Least Square)** method.
- ii) What are the requirements to obtain more reliable estimates in a regression.
- iii) What are the rules for including dummy variables in multiple regression?
- iv) You are given the data set of following variables. Gross domestic product, share of agriculture in gross domestic product, unemployment rate by gender, Per capita food consumption, Agricultural labour force, domestic savings from agriculture, unemployment rate by education levels, agricultural exports. Formulate a reasonable multiple regression model using the variables given and justify your model.