00176

REC-003

RESEARCH DEGREE PROGRAMME IN ECONOMICS

Term-End Examination

December, 2015

REC-003 : ECONOMETRIC METHODS

Time : 3 hours　　　　　　　　*Maximum Marks : 100*

Note : *Answer the questions from each section as directed.*

SECTION A

*Answer any **two** questions from this section.*　　　*2×20=40*

1.　Consider the multiple regression model $Y = X\beta + U$, where standard matrix notations apply. Derive the estimator for error variance σ^2 by OLS method.

2.　Consider the following two-equation system :

$$Y_1 = \alpha_1 + \alpha_2 Y_2 + u_1$$

$$Y_2 = \beta_1 + \beta_2 Y_1 + \beta_3 Z_1 + \beta_4 Z_2 + u_2$$

Estimate the the first equation with a view to obtain possible bias, inconsistency and efficiency through the following methods :

(a)　OLS

(b)　Indirect Least Squares

(c)　Instrumental variables with Z_1 as instrument

3. Explain the underlying idea behind the linear probability model. What are its limitations ? Explain how probit model takes care of these limitations.

4. What is meant by stationarity in a time series ? In what respects is the unit root problem related to stationarity ? How do you test for stationarity ?

SECTION B

*Answer any **five** questions from this section.*   *5×12=60*

5. Explain how GLS method can be used to deal with the problems of heteroscedasticity and autocorrelation.

6. What is meant by multicollinearity ? How do you detect it ? Suggest remedial measures.

7. Derive the coefficient of determination (R^2). How do you interpret it ?

8. Consider the production function $Y = A K^{\alpha} L^{\beta} e^{u}$. Derive OLS estimator for the parameters and interpret the model.

9. What is meant by heteroscedasticity ? Explain one of the remedial measures for the problem of heteroscedasticity.

10. While estimating a regression model you found that the explanatory variable is measured with certain error. Specify the model. What are its consequences on the parameters ?

11. Explain the concept of identification in a simultaneous equation system. Specify the rank and order conditions in identification of parameters.

12. Write short notes on the following :
    (a)   RESET Test
    (b)   Chow Test