

**RESEARCH DEGREE PROGRAMME IN
ECONOMICS**

00314 **Term-End Examination**

June, 2018

REC-103 : ECONOMETRIC METHODS

Time : 3 hours

Maximum Marks : 100

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

SECTION A

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

1. (a) Explain how OLS method can be applied to obtain estimators of α and β in the following regression model :

$$Y = A K^\alpha L^\beta e^u$$

- (b) In the above case, if $\alpha = 0$ and $\beta = 0$, prove that $R^2 = 0$.

2. The relationship between two variables Y and X is given by $Y = \alpha + \beta X + u$. Assume that the error term fulfils all classical assumptions.

X	4	2	0	3	3	3
Y	1	1	1	2	2	2

- (a) Using OLS method, obtain estimates of α and β .
- (b) Provide an unbiased estimate of the error variance, σ^2 .
3. (a) Bring out the limitations of linear probability model.
- (b) Explain how probit model can overcome these limitations.
4. Consider the following regression model :

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + u$$

The data on these variables are given as follows :

Y	1	2	3	4	5
X_1	10	15	17	21	23
X_2	20	30	34	42	46

- (a) Can the model be estimated using OLS method ? Explain.
- (b) Explain possible options to estimate the model.

SECTION B

Answer any *five* questions from this section.

5×12=60

5. Prove the Gauss-Markov theorem for a two variable regression model. Spell out the assumptions you make concerning the error term.
6. Write a short note on the identification problem in simultaneous equation models.
7. What is meant by stationarity in a time series ? Explain how you will deal with this problem.
8. What is meant by heteroscedasticity ? What are its consequences ? Suggest one remedial measure to overcome this problem.
9. Consider the regression model

$$Y_i = \alpha + \beta X_i + u_i$$

Obtain maximum likelihood estimator for α , β and σ^2 .

10. In what respects is a dynamic model different from the Koyck model ? Specify both the models and explain the difference.

11. Explain the concept of co-integration. Specify the model and its estimation procedure.

12. Write short notes on the following :

(a) Dummy Variable Trap

(b) Durbin – Watson Test
