

M.Sc. 3rd Semester Examination, 2011

ECONOMICS

PAPER—XI(EC-303E)

Full Marks : 40

Time : 2 hours

The figures in the right-hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

Illustrate the answers wherever necessary

Special Paper : (*Econometrics - III*)

GROUP – A

1. Answer any *five* questions : 2 × 5
- (a) What do you mean by seemingly unrelated regression ?

(Turn Over)

- (b) What is the relationship between transformation matrix(P) and variance-co-variance matrix(Ω) of error term in GLS.
- (c) Discuss the usefulness of GLRM.
- (d) What is recursive model ?
- (e) What is simultaneity test ?
- (f) What is K-class estimator ?
- (g) Give an example of dynamic econometric model in simultaneous equation system.
- (h) What is factor loading ?
- (i) What is communality ?
- (j) What are the different kinds of restrictions used for identification ?

GROUP – B

Answer any *two* questions :

5 × 2

2. What do you mean by error component model ? If the individual error component is non-autocorrelated

and homoseedastic, find out the correlation co-efficient between two different cross-section units at a given point of time.

3. Prove that OLS estimator is both biased and inconsistent in the simultaneous equation model.
4. What are the order and rank conditions for identification of an equation in a simultaneous equation model. Check the identification status of consumption function in the following model :

$$C_t = \alpha_0 + \alpha_1 Y_t - \alpha_2 T_t + u \text{ (Consumption function)}$$

$$I_t = \beta_0 + \beta_1 Y_{t-1} + v \text{ (Investment function)}$$

$$T_t = \gamma_0 + \gamma_1 Y_t + w \text{ (Taxation function)}$$

$$Y_t = C_t + I_t + G_t.$$

5. Prove that 1LS and 2SLS estimators are equivalent in just identified case with the help of the following model :

$$C = \alpha + \beta Y + u$$

$$Y = C + I.$$

GROUP – C

Answer any *two* questions : 10 × 2

6. Estimate the parameter when disturbances are cross-sectionally heteroscedastic and time-wise autoregressive.

7. (a) Explain the 2SLS estimation procedure.

$$(b) Y_{1t} = \beta_{12} Y_{2t} + \gamma_{11} X_{1t} + \gamma_{12} X_{2t} + u_{1t}$$

$$Y_{2t} = \beta_{21} Y_{1t} + \gamma_{23} X_{3t} + u_{2t}$$

$$X'X = \begin{bmatrix} 10 & 0 & 0 \\ 0 & 5 & 0 \\ 0 & 0 & 10 \end{bmatrix} \quad X'Y = \begin{bmatrix} 10 & 20 \\ 20 & 10 \\ 30 & 20 \end{bmatrix}$$

For the above model find the 2SLS estimates of the structural parameters of the first equation.

8. Explain the principal component analysis method. Find the principal components if the simple

correlation matrix of two explanatory variables are as follows :

$$A = \begin{bmatrix} 1 & .8 \\ .8 & 1 \end{bmatrix}$$

9. Explain the 3SLS and FIML estimation procedure.
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