M.Sc. 3rd Semester Examination, 2012

ECONOMICS

PAPER—ECO-303(E)

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 are the basic differences between CLRM and GLRM ?

(*b*) Formulate a model for prediction of *m* future values of *y* for given values of *x*.

(*c*) What do you mean by seemingly unrelated regression ?

(*d*) In case of heteroseedastic disturbance form the P matrix such that $P \Omega P' = I$ (where Ω is the var-cov matrix of disterbance term and P is the transformation matrix).

(*e*) What is FIML ?

(*f*) What is simultaneous equation bias ?

(*g*) Give an example of an under identified equation in a simultaneous equation system.

(*h*) What is ILS ?

(*i*) What is simultaneity test ?

(*j*) What are the uses of principal component analysis ?

GROUP – B

Answer any *two* of the following : 5 × 2

2. What do you mean by error components model ? Indicate the process of estimation of parameters of error components model.

3. $\beta_{11} y_{1t} + \beta_{12} y_{2t} + \gamma_{11} x_{1t} + \gamma_{12} x_{2t} = u_{1t}$

$\beta_{21} y_{1t} + \beta_{22} y_{2t} + \gamma_{21} x_{1t} + \gamma_{22} x_{2t} = u_{2t}$

check the identifiability of the above simultaneous equation system with the restrictions $\gamma_{12} = 0$ and $\gamma_{21} = 0$.

4. Discuss the 3 SLS estimation procedure.

5. Explain why OLS estimator is inconsistant in simultaneous equation system.

GROUP – C

Answer any *two* of the following : 10×2

6. Discuss the procedure for estimating the parameters in GLRM and prove that the estimated parameters are BLUEs.

7. Determine the elements of Ω (the variance covariance matrix of the regressian disturbances) when the disturbances are cross sectionally heteroseedastic and time-wise autoregressive.

8. (*a*) Explain with a suitable example how restriction on covariance can be used to identify equation.

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

$Y_{2t} = \beta_{21} Y_{1t} + \gamma_{21} X_{1t} + \gamma_{22} X_{2t} + u_{2t}$

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

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

9. (*a*) Explain the method of principal component analysis.

(*b*) Explain the LIML estimation procedure.