

**M.A. Examination, 2016**  
**Semester – III**  
**Economics**  
**Course: XI (Group-A) (Special Paper)**  
**( Econometrics-I )**

**Time: Three Hours**

**Full Marks: 40**

*Questions are of value as indicated in the margin*

**Answer Question No. 1, 2 or 3, 4 or 5.**

1. Examine whether the following statements are true (T), false (F) or uncertain (U) (provide a brief explanation) [*Any four*] 4×4=16
- In a binary response regression model, the error term is homoscedastic.
  - The Tobit coefficient of a regressor gives the marginal impact of that regressor on the mean value of the observed regressand.
  - The problem of simultaneity does not arise in a recursive simultaneous equations model.
  - 3SLS estimates are consistent.
  - Kyock transformation transforms an infinite distributed log model to an autoregressive model.
  - The method of instrumental variables (IV) can fix the problems of parameter estimation of an autoregressive model.

**Answer question number 2 or question number 3**

2. Explain how does the Logit Model solve the fundamental problem associated with the Linear Probability Model? What is the difference between the Logit and Probit Models? Specify the Probit Model and state the procedure to estimate such a model. How are the marginal effects computed in a Probit Model? 2+2+6+2=12
3. a) Distinguish between the nominal multinomial regression model and ordered multinomial regression model with examples.
- b) Consider a date set consist of 500 persons having three transportation choices: car, bus and rail. Suggest a suitable econometric model to estimate the probabilities of these three choices.
- c) How do you test the multiple restrictions in binary choice models?
- d) Suggest a suitable measure for examining 'goodness of fit' of estimated binary choice models. 2+4+3+3=12

**Answer question number 4 or question number 5**

4. a) Define the following
- Structural equations.
  - Reduced form equations.
  - Indirect least squares.
  - Two-stage least squares.

P.T.O.

- b) Prove that the 3SLS estimators and 2SLS estimators are identical if the error term of any equation is contemporaneously uncorrelated with the error term of any other equation. 1+1+2+2+6=12

5. The  $X'X$  matrix for all the exogenous variable in a model is

$$X'X = \begin{bmatrix} 7 & 0 & 3 & 1 \\ 0 & 2 & -2 & 0 \\ 3 & -2 & 5 & 1 \\ 1 & 0 & 1 & 1 \end{bmatrix}$$

only the first of these exogenous variable has a non-zero coefficient in a structural equation to be estimated by 2SLS. This equation includes two endogenous variables and the least square estimates of the reduced form coefficients for these two variables are

$$\begin{bmatrix} 0 & 1 & 3 & 2 \\ 1 & -1 & 1 & -1 \end{bmatrix}.$$

Taking the first endogenous variable as the dependent variable, state and solve the equation for the 2SLS estimates. 2+10=12

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