

Reg. No. :

M 11877

Name :

Fourth Semester M.Sc. Degree Examination, May 2006

STATISTICS

Paper 4.2: Econometrics (2004 Admn.)

Time: 3 Hours

Max. Marks: 70

Instructions: 1) Answer **any five** questions choosing either **A** or **B** from each Unit.

2) All questions carry equal marks.

UNIT - I

I. A) i) What are the assumptions for a simple classical linear regression model? Write down the model and discuss a practical situation where the model is being applied.

ii) State and prove the Gauss-Markoff theorem. (7+7)

OR

I. B) i) Consider the regression model $Y_{n \times 1} = X_{n \times k} \beta_{k \times 1} + G_{n \times 1}$

where $Y = \begin{bmatrix} y_1 \\ y_2 \\ \vdots \\ y_n \end{bmatrix}$, $X = \begin{bmatrix} x_{11} & \dots & x_{1k} \\ \vdots & & \vdots \\ x_{n1} & \dots & x_{nk} \end{bmatrix}$, $\beta = \begin{bmatrix} \beta_1 \\ \beta_2 \\ \vdots \\ \beta_k \end{bmatrix}$, $\varepsilon = \begin{bmatrix} \varepsilon_1 \\ \vdots \\ \varepsilon_n \end{bmatrix}$

Derive the test for significance of regression.

ii) Obtain the estimator for the regression coefficient β in a simple linear regression model and discuss its properties. (7+7)

UNIT - II

II. A) Describe the Almon approach to distributed lag models. How is it different from the Koyck distributed lag model. 14

OR

II. B) i) What do you understand by a distributed lag model? What are the reasons for lags?

ii) Describe the major methods of economic forecasting. (8+6)

P.T.O.

UNIT – III

- III. A) i) What do you mean by multicollinearity ? Explain.
 ii) Describe the effect of multicollinearity on least square estimates. (8+6)

OR

- III.B) i) Describe the Durkin-Watson d-test for detecting serial correlation.
 ii) What do you understand by heteroscedasticity ? Describe an approach to remediation when σ_i^2 is not known. (7+7)

UNIT – IV

- IV. A) What do you mean by simultaneous equation models ? Give any two examples.
 Show that the method of least squares give inconsistent estimators in simultaneous equation models. (7+7)

OR

- IV. B) Write short notes on: (7+7)
 i) The identification problem
 ii) Hausman-specification test.

UNIT – V

- V. A) i) Write a note on the Cobb-Douglas production function. Point out its importance and limitations.
 ii) State and prove Euler's theorem. (7+7)

OR

- V. B) Suppose that:

$$x = (0.2 K^{-1} + 0.8 L^{-1})^{-1}$$

- i) What is the elasticity of substitution ?
 ii) Suppose $K = \frac{1}{2}$ and $L = 1$, what are the absolute and relative income shares ?
 iii) What if K now rises to 1 ? Is this consistent with your findings about elasticity of substitution ?