

Reg. No. :

Name :

IV Semester M.A./M.Sc./M.Com. Degree (Reg./Sup./Imp.)

Examination, March 2012

STATISTICS

Paper – 4.2 : Elective – II : Econometrics

Time : 3 Hours

Max. Marks : 70

Instructions : Answer **any five** questions choosing **one** from **each** Unit.
All questions carry **equal** marks.

UNIT – 1

1. a) What is meant by a production function ?
- b) Describe the CES production function and show that it is homogeneous of degree one and it has constant returns to scale.
- c) Explain the concept of producers' equilibrium. (3+7+4)

OR

2. a) Define the Cobb-Douglas production function. Bring out its properties, explaining the economic significance of the parameters.
- b) What is elasticity of substitution ?
- c) Find the elasticity of substitution for the CES – production function,

$$q = 50 (0.4 K^{-0.4} + 0.6 L^{-0.4})^{-2.5}$$
 (7+3+4)

UNIT – 2

3. a) For the simple linear regression model obtain the least square estimates of the parameters. Establish the properties of these estimates.
- b) Discuss the testing of hypothesis $H: \beta_1 = \beta_2$ for the model

$$Y_t = \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + u_t$$
 (8+6)

OR

P.T.O.



4. a) Stating the basic assumptions, explain the multiple regression model. Employ the maximum likelihood method to estimate the parameters in this case and bring out the properties of the estimates.
- b) Define OLS residual. Obtain an unbiased estimator of error variance σ^2 based on the OLS residual. (8+6)

UNIT – 3

5. a) Explain the Almon lag model and discuss the estimation of its parameters.
- b) What are polynomial lag models ? Explain their utilities in Econometrics. How do you estimate the parameters of such models ? (6+8)

OR

6. a) Explain Non-linear Regression models and suggest a method for the estimation of parameters of such a model.
- b) Discuss the forecasting power of an econometric model. (8+6)

UNIT – 4

7. a) What is auto correlation ? What is its impact on LS estimators ? Discuss the test for the presence of auto correlation.
- b) Define instrumental variable estimators. Highlight the properties of such estimators. (7+7)

OR

8. a) Explain multicollinearity in regression models. What are its consequences ? What are the remedial measures ?
- b) Explain the idea of Ridge-regression and its properties. (8+6)



UNIT – 5

9. a) Explain :

- i) Under
- ii) Exact
- iii) Over identification of an econometric model.

b) Examine the following models for identification :

$$\text{Demand : } y_{1t} = \alpha_1 y_{2t} + \alpha_2 x_{1t} + u_{1t}$$

$$\text{Supply : } y_{1t} = \beta_1 y_{2t} + \beta_2 x_{1t} + \beta_3 x_{2t} + u_{2t}$$

Where y's are endogenous and x's are exogenous.

c) Prove that the least square estimates of the parameters of the recursive model are consistent. (4+6+4)

OR

10. Write short note on the following :

- a) Indirect least squares
- b) Problem of identification
- c) Full-information maximum likelihood methods. (5+5+4)