Oct-2017

M. Sc. Statistics (Sem.-IV) Examination

Code-3578

Time: 2.30 Min] Paper 13: Mathematical Economics, Economic Statistics and Econometrics [Marks: 70

1. (a) Explain elasticity of demand and discuss its uses. If the elasticity of the function f(X) is η, obtain the elasticity of the functions $Xf(X)$ and $f(X)/X$. 7
   (b) Explain Monopoly problems in economic theory. 7

OR

1. (a) Explain: (i) the marginal rate of substitution. 7
   (ii) elasticity of substitution.
   (b) The demand carve and supply carve of a commodity are given by $D= 19-3p-p^2$, and $S= 5p-1$. Find the equilibrium price and the quantity exchanged (if available). 7

2. (a) Explain Leontief's input-output analysis with assumption. 7
   (b) For a linear Homogenous production function x=f(a,b), derive 7

$$\sigma = \left(\frac{\partial x}{\partial a}\frac{\partial x}{\partial b}\right) \Big/ \left(x\frac{\partial^2 x}{\partial a \partial b}\right)$$

OR

2. (a) Show that $\pi = \sqrt{ax+b}$ the elasticity of total cost increases but remain less than unity as x increases. 7
   (b) Discuss Cobb-Douglass production function. Discuss its main properties. 7
3. (a) Explain the first order Auto regressive series. Also explain characteristics of an auto-regressive process 7
   (b) Explain the link-relative method of computing the indices of Seasonal variation. 7

OR

3. (a) Define a time series. Mention its important components with illustrations. 7
   (b) Describe the method of moving averages for estimating the trend in a time series. 7
4. (a) State Gauss-Markov structure of the liner model with assumptions. Derive the ordinary least estimator (OLS) of the model. Also derive its unbiasedness property. 7
   (b) Explain the multicollinearity. Discuss its consequences and detection. 7

OR

4. (a) What is auto correlation? Explain Durbin-Watson tests for detecting the presence of serial correlation 7
   (b) What is hetroscedasticity? Explain Goldfield and Quandt's test. 7
5. (a) Explain Instrumental variable method to estimate the parameter and show that its estimator is consistent. Also obtain its asymptotic variance. 7
   (b) Explain simultaneous equation models. Also explain identification problem. 7

OR

5. (a) Discuss two stage least square methods to estimate parameters in reduced form equation. 7
   (b) Explain the linear model with stochastic regressors. Show that OLS estimator under this set up is a consistent estimator. Also obtain its variance. 7