

23/3/2018

DOON UNIVERSITY, DEHRADUN  
Mid Semester Examination, 2018  
Department of Economics  
M.Sc. Sixth Semester  
SSEI- 222: Econometrics II

**Time Allowed: 2 hrs.**

**Max. Marks: 30**

**Note: Attempt All Questions from Sections A,B,C.**

**SECTION : A**

All questions are compulsory and carry equal marks.

**(Marks: 3x2=6)**

1. How do we know whether our estimated parameters are close to the population parameters?
2. Write the econometric model for consumption function as a function of Income. Explain the economic meaning of the co-efficient of this function.
3. How is a linear regression model different from a non-linear regression model? Use suitable equations to answer the question.

**SECTION : B**

Answer any THREE.

**(Marks: 3x4=12)**

1.  $X_1$  and  $X_2$  are two explanatory variable and  $Y_i$  ( $i= 1, 2...5$ ) is a dependent variable in a three-variable linear regression model. Given the following matrices, estimate the value of the parameters.

$$y = \begin{bmatrix} 3 \\ 1 \\ 8 \\ 3 \\ 5 \end{bmatrix} \quad X = \begin{bmatrix} 1 & 3 & 5 \\ 1 & 1 & 4 \\ 1 & 5 & 6 \\ 1 & 2 & 4 \\ 1 & 4 & 6 \end{bmatrix}$$

2. Define autocorrelation. Write the first order autoregressive scheme and show how it is different from a simple linear regression model. Also explain the major causes for the existence of autocorrelation.
3. Given that D is the demand, P is the Price, a and b are parameters, show that,
  - a) In the demand function,  $D = a + bP + u$  ( $b < 0$ ), the slope b is a component of the price elasticity of demand.
  - b) In the demand function,  $D = aP^b + u$  ( $b < 0$ ), b is the price elasticity of demand.
4. State and explain using suitable equations, the assumptions of the Classical Linear Regression Model.

SECTION : C

Answer any ONE.

(Marks: 1x12=12)

1. State the Gauss Markov Theorem. Prove that the estimators of the two variable linear regression model are BLUE (Best Linear Unbiased Estimator).
2. Given the following data on quantity supplied of a commodity and the price, answer the following questions
  - a) Estimate the parameters and conduct the theoretical test of significance of the parameters.
  - b) Given the standard error of  $b_1$  and  $b_2$  as 8.3 and 0.9 respectively, evaluate whether the parameters are statistically significant and whether you will accept or reject the null hypothesis.

No. of observation	Quantity supplied	Price
1	69	9
2	76	12
3	52	6
4	56	10
5	57	9
6	77	10
7	58	7
8	55	8
9	67	12
10	53	6
11	72	11
12	64	8

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