

B.Sc. Semester-VI Examination, 2022-23**ECONOMICS [Honours]**

Course ID : 61611 Course Code : SH/ECO/601/C-13

Course Title : Introductory Econometrics

Time : 2 Hours

Full Marks : 40

*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*1. Answer any **five** of the following questions:

2×5=10

- Write the definition of *Econometrics*.
- Distinguish between *Simple Linear Regression Model* and *Multiple Linear Regression Model*.
- What is meant by *Degrees of Freedom*?
- State the *Gauss-Markov Theorem*.
- What is *Coefficient of Determination*?
- What is meant by *Analysis of Variance* in the context of a simple linear regression model?
- Define a *Dummy Variable*.

h) What is meant by *Pooling Technique* in the context of Multicollinearity?2. Answer any **four** of the following questions:

5×4=20

- What is an *Econometric Model*? State the desirable properties of an Econometric Model.
2+3=5
- What is a *Random Disturbance Term*? Discuss briefly why a Random Disturbance Term is included in an econometric relationship.
1+4=5
- State the major assumptions of the *Classical Linear Regression Model (or OLS)* and give an intuitive explanation of the meaning and need for each of them.
- The following table gives the price and quantity demanded for a product over six year period:

Year	1990	1991	1992	1993	1994	1995
Quantity ('000 kg.)	8	3	4	7	8	0
Price ('00 Rs.)	2	4	3	1	3	5

Estimate the demand function assuming it to be linear and comment on the values of the estimated coefficients.

- e) What is Heteroscedasticity? What are the consequences of *Heteroscedasticity*? 2+3=5
- f) What is meant by *Autocorrelation*? State the possible sources of *Autocorrelation*. 2+3=5

3. Answer any **one** of the following questions:

10×1=10

- a) State and explain the various steps involved in the *Traditional* or *Classical Methodology of Econometric Research*.
- b) Consider a Three-Variable Linear Regression model involving a dependent variable Y, two explanatory variables X_1 and X_2 , and a random disturbance term u specified as:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + u_i; \quad i = 1, 2, \dots, n$$

where, β_0 , β_1 and β_2 are the parameters.

Obtain the OLS estimates of the parameters of the regression model briefly stating your assumptions.
