

2019

B.Sc.

4th Semester Examination
ECONOMICS (Honours)

Paper - C10T

(Introductory Econometrics)

Full Marks : 60

Time : 3 Hours

*The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.*

Group - A

1. Answer any *ten* questions : 10×2
- (a) Define standard error of estimator.
 - (b) What is “Goodness of fit” ?
 - (c) Define partial correlation.
 - (d) Write any two sources of autocorrelation problem.

[Turn Over]

- (e) Distinguish between “perfect” and “imperfect” multicollinearity.
- (f) Define Type I and Type II errors.
- (g) Why is error term introduced in a regression model ?
- (h) What do you mean by Power of a test ?
- (i) What is specification bias ?
- (j) Define homoscedasticity ?
- (k) Write two basic assumptions of classical Linear Regression Model.
- (l) What is dummy variable ? Discuss its uses.
- (m) Discuss the characteristics of normal distribution.
- (n) What is meant by degrees of freedom ?
- (o) What is reverse regression ?

Group - B

Answer any *four* questions : 4×5

2. Define econometrics. How does an econometric model differ from a mathematical model ? 5
3. Is it possible to estimate unknown parameters of a multiple regression model if there is perfect multicollinearity ? If not why ? 5
4. Show how the total variation in dependent variable of a linear regression model can be decomposed into two parts — 'explained variation' and 'unexplained variation'.
5. Given the estimated regression equation analysis of consumption (Y) on income (X) data :

$$\hat{Y}_i = 24.4545 + 0.509X_i$$

$$\text{Standard error} = (6.4138) (0.0357) \quad r^2 = 0.9621$$

$$t = (3.8128) (14.2605) \quad df = 8$$

$$p = (0.002571) (0.000000289)$$

Interpret the results.

[Turn Over]

6. Define the term homoscedasticity. Explain the effects of homoscedasticity on the estimates of a parameters and their variances in a normal regression model.
7. Define 't' statistics. Discuss the uses of 't' test and the features of 't' statistic.

Group - C

Answer any *two* questions : 2×10

8. State the usefulness of the R^2 -statistic as a measure of goodness of fit. What is the difference between R^2 and adjusted - R^2 ? How would you examine overall statistical significance of your estimated reression model ? 3+3+4
9. Indicate whether the following statements are true (T), false (F) or uncertain (U) and give a brief explanation.
 - (i) Multicollinearity makes the standard errors of estimated coefficients small.
 - (ii) The OLS estimators become biased and inefficient where there is autocorrelation. 5+5
10. Given the assumptions of classical linear regression model, show that the least-square estimators are BLUE.

11. (i) What do you mean by autocorrelation ?
- (ii) What is the difference between OLS and GLS.
- (iii) Discuss in brief the Goldfeld-Quandt Test in detecting Heteroscedasticity. 3+3+4
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