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4 SEM TDC ECOH (CBCS) C 10

2025

(May/June)

ECONOMICS

(Core)

Paper : C–10

(Introductory Econometrics)

Full Marks : 80

Pass Marks : 32

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Answer the following questions/Choose the correct option : 1×8=8

(a) What do you understand by 'regression'?

(b) Mention one limitation of econometrics.

(c) What is a null hypothesis?

(d) What is specification error?

(e) Which of the following is a consequence of heteroscedasticity?

(i) The OLS estimator are no longer BLUE

(ii) The explanatory variables are correlated

(iii) Intercept is zero

(iv) None of the above

(f) Breusch-Pagan test is used to detect

(i) autocorrelation

(ii) multicollinearity

(iii) heteroscedasticity

(iv) All of the above

(g) Which of the following best describes a Type I error?

(i) The null is true, but we mistakenly reject it

(ii) The null is false and we reject it

(iii) The null is false, but we fail to reject it

(iv) The null is true, but we fail to reject it

(h) Which of the following is used to test the overall significance of a regression model?

(i) t-test

(ii) Z-test

(iii) F-test

(iv) χ^2-test

2. Answer any *four* of the following : 4×4=16

(a) Explain the rationale of the random disturbance term in regression model.

(b) "u_i's are iid." Explain the statement in relation to standard assumptions of OLS.

(c) Write briefly about Type I and Type II error.

(d) Explain power of a test.

(e) Briefly describe the properties of a good estimator.

(f) "The construction of an economic model involves the specification of the relationships that constitute it." Explain the statement.

3. (a) What is dummy variable? Explain the concept of dummy variable with the help of an example. 2+8=10

Or

(b) Discuss the concept of goodness of fit in a simple linear regression model. Distinguish between R^2 and $\bar{R}^2$. 5+5=10

4. (a) What is multicollinearity? Discuss the causes and different methods of detection of multicollinearity. 2+8=10

Or

(b) Explain the various remedial measures of multicollinearity in regression model. 10

5. *(a)* Explain what you understand by heteroscedasticity. Analyze the causes of heteroscedasticity. 6+6=12

Or

(b) Explain any two methods of testing heteroscedasticity in regression model. 6+6=12

6. *(a)* Define autocorrelation. Explain the various sources of autocorrelation. What are the consequences of autocorrelation? 4+4+4=12

Or

(b) Explain Durbin-Watson test and Durbin's *h*-test of detecting autocorrelation. 6+6=12

7. *(a)* Omission of relevant variables and inclusion of irrelevant variables are two types of incorrect model specifications in linear regression model. Explain the statistical consequences arising from both the situations. 6+6=12

Or

(b) Explain the various tests of detecting specification error. Explain the concept of errors in variables in econometrics. 8+4=12

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