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4 SEM TDC ECOH (CBCS) C 10

2024

(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. Choose the correct answer : 1×8=8

(a) The probability of Type I error is

- (i) degree of freedom
- (ii) standard error
- (iii) level of significance
- (iv) None of the above

(2)

(b) The term 'Regression' was introduced by

- (i) Ragnar Frisch
- (ii) Sir Francis Galton
- (iii) Karl Pearson
- (iv) Both (i) and (ii)
- (v) None of the above

(c) $E(uu') = ?$

- (i) $\sigma_u^2 I$
- (ii) $\sigma_u^2 A'$
- (iii) I
- (iv) None of the above

(d) Dummy variable can

- (i) take any value between 0-100
- (ii) take any value between 10-100
- (iii) only take value 0 and 1
- (iv) only take positive values

(3)

(e) Multicollinearity is essentially a

- (i) sample phenomenon
- (ii) population phenomenon
- (iii) Either (i) or (ii)
- (iv) Both (i) and (ii)
- (v) None of the above

(f) In case of multicollinearity problem

- (i) R^2 is high but few t -test ratios are significant
- (ii) R^2 is low but t -test ratios are significant
- (iii) R^2 is high with high t -test ratio
- (iv) R^2 is low with low t -test ratio
- (v) None of the above

(g) The coefficient of determination value lies between

- (i) -1 and +1
- (ii) -1 and 0
- (iii) 0 and +1
- (iv) None of the above

(4)

- (h) ANOVA model consists of
- (i) quantitative explanatory variables
 - (ii) qualitative explanatory variables
 - (iii) both quantitative and qualitative explanatory variables
 - (iv) None of the above

2. Write short notes on any four of the following (**within 150 words** each) : $4 \times 4 = 16$

- (a) Type I and Type II errors
- (b) R-bar square (\bar{R}^2)
- (c) Perfect multicollinearity v/s imperfect multicollinearity
- (d) Errors in variable
- (e) The stochastic error term

3. (a) What do you mean by econometrics? Distinguish between mathematical economics and econometrics. Explain the nature and scope of econometrics.

$2+4+6=12$

(Continued)

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(5)

Or

- (b) What is null and positive hypothesis? What are the steps involved in hypothesis testing? Discuss with the help of an example. $4+8=12$

4. (a) "Under the assumptions of the classical linear regression model, the OLS is BLUE." Prove the statement. What is the difference between the stochastic error term and the residual u_i ? $7+4=11$

Or

- (b) What is Gauss-Markov theorem? Discuss the main assumptions of the OLS. $3+8=11$

5. (a) Analyse the main consequences of heteroscedasticity. Discuss the remedial measures to remove the problem of heteroscedasticity. $5+6=11$

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(Turn Over)

(6)

Or

(b) Define different methods to detect the problem of heteroscedasticity. 11

6. (a) What do you mean by autocorrelation? Explain the Durbin-Watson test to detect the problem of autocorrelation. Mention few limitations of the Durbin-Watson test. 3+6+2=11

Or

(b) Discuss the main effects of the autocorrelation problem. How do you remove/solve the problem of autocorrelation? Suggest some measures of the problem. 5+6=11

7. (a) Define specification error. Discuss the main types of specification errors. What are the methods to solve the problem of specification error? 2+4+5=11

(Continued)

(7)

Or

(b) What do you mean by errors in variables? Discuss the various tests to detect the problem of specification error. Write two main consequences of omitting relevant variables. 2+5+4=11
