

D 31304**(Pages : 3)****Name.....****Reg. No.....****THIRD SEMESTER P.G. DEGREE EXAMINATION, NOVEMBER 2022****(CCSS)****Economics****ECO 3C 10—BASIC ECONOMETRICS****(2019 Admission onwards)****Time : Three Hours****Maximum : 80 Marks****Part A***Answer all questions.**Each question carries 1 mark.***Multiple Choice Questions :**

1. The term regression was coined by :
 - (a) Francis Galton.
 - (b) Karl Pearson.
 - (c) Carl Friedrich Gauss.
 - (d) William Sealy Goss.
2. Homoscedasticity means :
 - (a) Constant variance.
 - (b) Minimum variance.
 - (c) Maximum variance.
 - (d) Zero variance.
3. Heteroscedasticity is more likely a problem of :
 - (a) Cross-section data.
 - (b) Time series data.
 - (c) Pooled data.
 - (d) All of the above.
4. R^2 equal to :
 - (a) TSS/ESS.
 - (b) ESS/TSS.
 - (c) $1-(TSS/ESS)$.
 - (d) $1-(ESS/TSS)$.
5. Multicollinearity does not hurt if the objective of the estimation is :
 - (a) Forecasting only.
 - (b) Prediction only.
 - (c) Getting reliable estimation of parameters.
 - (d) Prediction or forecasting.

Turn over

6. The regression coefficient estimated in the presence of autocorrelation in the sample data are NOT :
- (a) Unbiased estimators.
 - (b) Consistent estimators.
 - (c) Efficient estimators.
 - (d) Linear estimators.
7. In the regression specification $y = \alpha + \beta + \varepsilon$.
- (a) α is called the intercept, β is called slope, and ε is called residual.
 - (b) α is called the slope, β is called intercept, and ε is called residual.
 - (c) α is called the intercept, β is called slope, and ε is called the error.
 - (d) α is called the slope, β is called intercept, and ε is called the error.
8. The variance of the error term in a regression is :
- (a) The average of the squared residuals.
 - (b) The expected value of the squared error term.
 - (c) SSE divided by the sample size.
 - (d) None of these.
9. The dummy variable trap occurs when :
- (a) A dummy is not defined as zero or one.
 - (b) There is more than one type of category using dummies.
 - (c) The intercept is omitted.
 - (d) None of the above.
10. In general, omitting a relevant explanatory variable creates :
- (a) Bias and increases variance.
 - (b) Bias and decreases variance.
 - (c) No bias and increases variance.
 - (d) No bias and decreases variance.

(10 × 1 = 10 marks)

Part B (Very Short Answer Questions)

*Answer any **five** questions.*

Each question carries 2 marks.

*Answer in one **or** two sentences each.*

- 11. What is stochastic error term ?
- 12. Why we estimate Standard Error ?
- 13. What is 'goodness of fit' ?
- 14. What is the classic symptom of Multicollinearity ?
- 15. What is Student t test ?
- 16. What do you mean by Restricted Least Square ?

17. Bring out the relationship between R^2 and F ratio.
18. Justify the use of random error term in a regression model.

(5 × 2 = 10 marks)

Part C (Short Answer Questions)

*Answer any **eight** questions.
Each question carries 5 marks.*

19. Explain the statistical properties of OLS estimators.
20. What are the desirable properties of estimators ?
21. Explain the estimation procedure of Ordinary Least Squares method in Single Linear regression model.
22. Briefly discuss the methods of detecting autocorrelation.
23. Explain adaptive expectation models and partial adjustment models.
24. Briefly describe the procedure for solving Multicollinearity.
25. Explain First Order Auto Regressive Scheme.
26. How do Instrumental Variables work ?
27. Discuss any one method of detecting autocorrelation.
28. What is a lagged model ?
29. Briefly explain the important applications of econometrics.
30. What is significance of Best Linear Unbiased Estimator (BLUE) in the Econometric analysis ?

(8 × 5 = 40 marks)

Part D (Essay Type Questions)

*Answer any **two** questions.
Each question carries 10 marks.*

31. Discuss the problem of autocorrelation in regression analysis and explain the causes, detection and solution for the problem.
32. Consider the following simultaneous equation model :

$$Y_1 = a_{13}Y_3 + b_{12}X_2 + u_1$$

$$Y_2 = a_{21}Y_1 + a_{23}Y_3 + b_{21}X_1 + b_{22}X_2 + u_2$$

$$Y_3 = a_{32}Y_2 + b_{33}X_3 + u_3$$

Check the identification status of each of the equations in the model on the basis of order and rank condition.

33. Explain in detail Gauss Markov theorem.
34. Discuss the role and importance of statistical methods used in econometrics. Give suitable examples.

(2 × 10 = 20 marks)