



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – STATISTICS

FIFTH SEMESTER – NOVEMBER 2011

ST 5405 - ECONOMETRIC METHODS

Date : 12-11-2011
Time : 9:00 - 12:00

Dept. No.

Max. : 100 Marks

PART – A

Answer ALL questions

(10 x 2 = 20)

1. Define R square.
2. State the Application of Regression analysis.
3. Explain the term Econometrics.
4. What is meant by Intercept and Slope?
5. State any two properties for Simple linear regression model.
6. What is Multiple Regression? Give an Example.
7. Describe Multicollinearity.
8. Define Specification error?
9. Briefly explain bench mark category with an example.
10. Mention the test for detecting heteroscedasticity.

PART – B

Answer any FIVE questions

(5 x 8 = 40)

11. (i) Explain ANOVA in Regression model
(ii) Explain test for significance of individual Regression coefficients.
12. Derive $\hat{\beta}$ by using matrix approach for a multiple linear regression models.
13. Explain in detail Goals of Econometrics.
14. (i) How to identify Multicollinearity using VIF.
(ii) Define Adjusted R square.
15. Derive Coefficient of Determination.
16. Explain lagged variable with an illustration.
17. State the assumptions and also prove linearity property in simple linear regression models.
18. From the following data estimate d-statistic and test for autocorrelation.
 $e_t : 0.7, 2.2, -1.9, -3.2, 2.3, 2.9, 0.7, 0.5, 2.6, -2.8, -1.7$

(Given $d_L = 1.45$ and $d_U = 1.65$)

PART - C

Answer any TWO questions

(2 x 20 = 40)

19. (i) State and prove Gauss-Markov theorem.

(ii) . Consider the model with the following observations on Y and X

Y	2	2	2	1	3	5	6	6	10	10	10	12	15	10	11
X	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

The estimated model is $\hat{Y} = -0.28 + 0.91X$; Examine the existence of heteroscedasticity using spearman's rank correlation test.

20. Given the following data:

$$\sum XY = 353, \sum X^2 = 304, \sum Y^2 = 428, \sum X = 50, \sum Y = 60, n = 10$$

(i) Estimate the simple Regression model.

(ii) Find R^2

(iii) Test the Significance of the parameters at 5% level of Significance.

(iv) Write the Interpretation of the estimated results.

21. (i) Write short notes on Scope of Econometrics.

(ii) Derive least square estimators for simple linear regression models.

22. The following table gives the values of Travel time Y(in hours), Miles Travelled (X_1) and Number of deliveries(X_2).

Y	X_1	X_2
5	4	7
7	3	4
6	5	5
8	2	3
4	6	2

Estimate the Regression Model and determine R square, Adjusted R square and provide your conclusion.
