

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – STATISTICS

FIFTH SEMESTER – APRIL 2010

ST 5405 - ECONOMETRIC METHODS

Date & Time: 29/04/2010 / 9:00 - 12:00 Dept. No.

Max. : 100 Marks

SECTION A

Answer ALL questions.

[10 x 2 = 20]

1. Define the term 'Econometrics'.
2. Mention the difference between linear and non linear model.
3. Write down the properties of least squares estimators of the parameters of a linear model.
4. What information does the standard error of an estimator provide?
5. Define coefficient of determination.
6. How are the slope coefficients in a multiple linear model interpreted?
7. Mention any situation in which dummy variable can be used in a linear model.
8. What is meant by heteroscedasticity?
9. Define multicollinearity.
10. What are lagged variables?

SECTION B

Answer any FIVE questions.

[5 x 8 = 40]

11. Mention the various assumptions of a linear model.
12. Explain the need for introducing error term in a linear model.
13. Derive the least squares estimators of parameters of a two variable linear model.
14. Fit a linear model of Y on X based on the following data and obtain the residuals.

Y:	1.2	2.4	1.7	2.6	1.0	4.3	3.3	3.8
X:	18	15	30	23	12	21	19	20

15. Describe the method of testing the individual significance of the slope parameters of a multiple linear model.
16. Explain the different ways of constructing a linear model involving an independent variable having 'm' categories.
17. Explain any two methods of detecting multicollinearity.
18. Describe the 'Almond' scheme for overcoming autocorrelation.

SECTION C

Answer any TWO questions.

[2 x 20 = 40]

19. Prove that the least squares estimators of the parameters of a two variable linear model are unbiased. Also obtain the variance of the estimators.
20. Decompose the total sum of squares of a 'k' variable linear model into explained sum of squares and residual sum of squares and hence describe the method of testing the overall significance of the model.
21. Describe the method of generalized least squares and obtain the estimators of the parameters of a two variable linear model in the presence of heteroscedasticity.
22. Explain the various methods of overcoming multicollinearity.
