LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – STATISTICS

THIRD SEMESTER – NOVEMBER 2009

S 940 - ECONOMETRICS

Date & Time: 12/11/2009 / 9:00 - 12:00 Dept. No. Max. : 100 Marks

SECTION A

Answer all questions. **(10x2=20)**

1. Define Econometrics.
2. Show that the least square estimators are unbiased.
3. State BLUE property.
4. Define linear hypothesis.
5. What information does the coefficient of determination provide?
6. Mention any two methods to overcome the problem of collinearity.
7. What is heteroscedasticity?
8. What are lagged variables?
9. Mention any one use of having dummy variables in a model.
10. Define Instrumental variable.

SECTION B

Answer any FIVE questions. **(5x8=40)**

11. Fit a linear model of Y on X for the following data and obtain the residuals.

Y:	12	15	22	27	28	30	35	40
X:	2	5	7	9	11	13	15	17

12. For the model $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + u$, explain the method of testing $\beta_1 = \beta_2 = 0$
13. Write short notes on (i) Specification error (ii) Dummy variables.
14. Explain the method of Ridge regression.
15. Explain the concept of generalized least squares.
16. Describe the method of estimating simultaneous equation models.
17. Explain the concept of two stage least squares method.
18. For the model $Y = X\hat{\beta} + u$, find $V(\hat{\beta})$ under the assumption of unequal variances of u.

SECTION C

Answer any TWO questions. **(2x20=40)**

19. State and prove the Gauss – Markov theorem.
20. a.) Mention the assumptions of a linear model.
    b.) Consider the following data on annual income (in 000's $) categorized by gender and age.

Income:	12	10	14	15	6	11	17
Gender:	0	1	1	0	0	1	1
Age:	1	1	0	1	0	0	1

    where Gender = 1 if male; 0 if female and Age = 1 if less than or equal to 35; 0 if greater than 35. Fit a linear model of Income on Gender and age. Interpret the results. (8+12)
21. Explain the procedure of Kyock and Almond scheme.
22. Explain the consequences of multicollinearity, heteroscedasticity and autocorrelation.

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