LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.A. DEGREE EXAMINATION – **ECONOMICS**

THIRD SEMESTER – **APRIL 2014**

EC 3813 - MODERN ECONOMETRICS

Date : 12/04/2014 Dept. No. Max. : 100 Marks

Time : 01:00-04:00

PART A

Answer any FIVE of the following questions: [5x4=20 marks]

1. Distinguish between parameter stability and structural change.
2. Write a note on Chow's prediction failure test.
3. Define a Linear Probability Model.
4. Distinguish between 'balanced panel' and 'unbalanced panel'.
5. Write a note on Recursive Least Squares.
6. Define the following terms:
   a. Cross Section data.
   b. Time Series data.
   c. Pooled Data.
7. Compare and Contrast Stochastic Processes to Stationary Stochastic Processes.

PART B

Answer any FOUR of the following questions:- [4X10=40 marks]

8. Outline the procedure for testing the equality of the two regression coefficients.
9. Explain the mechanics of Chow test.
10. Outline the procedure for testing the overall significance of an observed multiple regression.
11. Explain the Logit model as an alternative to LPM.
12. Briefly outline the Random Effects approach.
13. Explain the following concepts:
    a. Difference Stationary Process.
    b. Stochastic Trend and Deterministic Trend.
    c. Random Walk with drift and Deterministic Trend.
    d. Deterministic Trend with Stationary AR (I) Component.
14. Describe Graphical analysis and Correlogram test used for the tests of Stationarity.

PART C

Answer any TWO of the following questions:- [2X20=40 marks]

15. Given the Cobb – Douglas production function $Y_i = \beta_1 X_{2i}^{\beta_2} + X_{3i}^{\beta_3} e^{u_i}$ which follows constant returns to scale; How can we test whether the model satisfy some restrictions? Support your answer using suitable test procedure.
16. Using a sample of 64 countries the model for estimation is as follows :

$$\widehat{CM}_i = \beta_1 + \beta_2 PGNP_i + \beta_3 FLR_i + U_i$$

where, CM (Child Mortality rate is a function of Per- capita GNP and Female Literacy rate).

The regression results are :

$$\widehat{CM}_i = 263.6416 - 0.0056 PGNP_i - 2.2316 FLR_i \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

$$se = (11.5932) \quad (0.0019) \quad (0.2099)$$

$R^2 = 0.7077$

The result of extended regression model is:

$$\widehat{CM}_i = 168.3067 - 0.0055 PGNP_i - 1.7680 FLR_i + 12.8686 TFR_i \ldots\ldots (2)$$

$$se = (32.8916) \quad (0.0018) \quad (0.2480) \quad (?)$$

$R^2 = 0.7474$

where, TFR is Total Fertility Rate.

a. How would you interpret the co-efficient of TFR? A priori, would you expect a positive or negative relationship between CM and TFR? Justify your answer.
b. Have the coefficient values of PGNP and TFR changed between the two models and why? Which test do you use for tesing the significance and why?
c. Using appropriate statistical test, find the appropriate model of choice and why? Show the calculations.
d. Find the Standard Error of the coefficient of TFR.[Recall the relatioship between 't' and 'F' distributions].

17. Explain the possibilities in Fixed Effects approach to the estimation of Panel data models.
18. **A.** Briefly explain the following processes :
    a. AR (I).
    b. MA (I)
    c. ARMA (I,I)

    B. Explain the procedure of Box – Jenkins Methodology.