LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.A.DEGREE EXAMINATION –**ECONOMICS**

THIRD SEMESTER – **NOVEMBER 2017**

16PEC3MC03– ADVANCED ECONOMETRICS

Date: 06-11-2017   Dept. No.   Max. : 100 Marks
Time: 09:00-12:00

PART A

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

1. State the normality assumptions of the disturbance term Ui.
2. How Hansen test supports testing of structural break?
3. Write a note on Chow's prediction failure test.
4. What is the employability of a Correlogram?
5. Write a note on Recursive Least Squares.
6. Point out the uniqueness of panel data models.
7. How can one identify the situation of spurious phenomenon in time series regressions?

PART B

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

8. Discuss the mechanics of Chow test.
9. Outline the procedure for testing the overall significance of an observed multiple regression model
   $$Y_i = \beta_1 + \beta_2 X_{2i} + \cdots \ldots \ldots \ldots \ldots \ldots .. + \beta_k X_{ki} + U_i.$$
10. Compare and contrast the Logit and Probit models.
11. From the annual data for the years 1988 – 2007, the following regression results were obtained:
    $$\hat{Y}_t = -859.92 + 0.6470\, X_{2t} - 23.195\, X_{3t} \ldots \ldots \ldots \ldots \ldots \ldots .. \text{ (1)}$$
    $$R^2 = 0.9776.$$
    $$\hat{Y}_t = -261.09 + 0.2452\, X_{2t} \qquad \ldots \ldots \ldots \ldots \ldots \ldots \ldots ..\text{(2)}$$
    $R^2 = 0.9388.$

    Where, Y = U.S expenditure on imported goods, billions of 2002 dollars, X_2 = personal disposable income, billions of 2002 dollars, X_3 = trend variable.
    True or False : The standard error of X_3 in eqn (1) is 4.2750. Show your calculations.
    [Hint: Use the relationship between R^2, F and 't'].

12. From a household budget survey of 1980 of the Dutch Central Bureau of Statistics, J. S. Cramer obtained the following logit model based on a sample of 2820 households. The purpose of the logit model was to determine car ownership as a function of (logarithm of) income. Car ownership is a dichotomous dummy variable:

    $$\hat{L}_i = -2.77231 + 0.347582 \ln Income$$

    t =   (- 3.35)   (4.05)
    χ^2 (1 df) = 16.681   p value = 0.0000

    where, ln Li = estimated logit and ln Income is the logarithm of income.

    a. Interpret the estimated logit model.
    b. From the estimated logit model, how would you obtain the expression for the probability of car ownership?
    c. What is the probability that a household with an income of 20,000 will own a car? And at an income level of 25,000? What is the rate of change of probability at the income level of 20,000?

13. Examine the employability of Tobit model in estimating censored samples.
14. Briefly outline the Random Effects approach.

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. Consider the following Wage – determination equation for the Indian economy for the period 1995 – 2014:

$$\widehat{W_t} = 8.582 + 0.364\,(PF)_t + 0.004\,(PF)_{t-1} - 2.560\,U_t$$
$$\text{SE:} \quad (1.129) \quad (0.080) \quad (0.072) \quad (0.658)$$
$$R^2 = 0.873 \qquad \text{d:f} = 15$$

Where, W = wages and salaries per employee

      PF = prices of final output at factor cost

      U = Unemployment as a percentage of the total number of employees of India.

      t = time period

  a. Interpret the preceding equation.

  b. Are the estimated coefficients individually significant?

  c. What is the rationale for the introduction of $(PF)_{t-1}$?

  d. Should the variable $(PF)_{t-1}$ be dropped from the model? why?

  e. How would you compute the elasticity of wages and salaries per employee with respect to the Unemployment rate U?

17. Examine the possibilities in Fixed Effects approach to the estimation of Panel data models.

18. Elucidate the various tests of stationarity.

****