

THIRD SEMESTER M.A. DEGREE EXAMINATION, DECEMBER 2018  
(CUCHSS—PG)

Economics

## ECO 3C 12—BASIC ECONOMETRICS

(2015 Syllabus Year)

Time: Three Hours

Maximum : 36 Weightage

## Part A

Answer all questions.

Each bunch of four questions carries a weightage of  $\frac{1}{4}$ .1. In a semi-log model of type  $\log Y_i = \beta X_i$ , the co-efficient  $\beta$  stands for the :

- (a) Slope. (b) Slope and Elasticity.  
 (c) Elasticity. (d) Growth rate.

2. Simple correlation coefficient of  $[X, Y]$  is defined as :

- (a)  $\text{Cov}[X, Y]$ . (b)  $\frac{\text{Cov}[X, Y]}{\text{s.d}[X] \times \text{s.d}[[Y]]}$ .  
 (c)  $\frac{\text{Cov}[X, Y]}{\text{Var } X \times \text{Var } Y}$ . (d)  $\frac{\text{Var}[X] \cdot \text{Var}[Y]}{\text{s.d}[X] \times \text{s.d}[[Y]]}$ .

3. In statistics the reliability of an estimate is measured by its :

- (a) Standard error. (b) Student  $t$  value.  
 (c) F value. (d)  $p$ -value.

4. The Jarque-Bera test of normality is based on :

- (a) Skewness. (b) Kurtosis.  
 (c) Skewness and Kurtosis. (d) Variance.

5. Which of the following is a multi-collinearity diagnostic ?  
(a) Condition Index.  
(b) Durbin's  $t$  test.  
(c) Glejser test.  
(d) Park test.
6. Regression models containing an admixture of quantitative and qualitative variables are :  
(a) ANOVA models.  
(b) ANCOVA models.  
(c) Parallel regressions.  
(d) Cointident regressions.
7. The structural break in a data set is tested by :  
(a) Runs test.  
(b) Lagrange multiplier test.  
(c) Chow test.  
(d) Von-Neumann ratio test.
8. Dropping a variable from a model may lead to what is called :  
(a) Specification error.  
(b) Sampling error.  
(c) Measurement error.  
(d) Standard error.
9. In the  $k$ -variable case, the main diagonal elements in the simple correlation matrix are :  
(a) Zero.  
(b) One.  
(c) Less than One.  
(d) More than one.
10. The likelihood ratio test is related to :  
(a) Maximum likelihood method.  
(b) Ordinary least squares method.  
(c) Likelihood method.  
(d) Generalised least squares method.
11. The test to find out whether the error term follows a normal distribution is the :  
(a) F-test.  
(b) Error test.  
(c) Normality test.  
(d)  $t$  - test.
12. Which of the following models is used to regress on dummy dependent variable ?  
(a) The LPM model.  
(b) The tobit model.  
(c) The logit model.  
(d) All of the above.

**Part B***Answer any five questions.**Each question carries a weightage of 1.*

13. Distinguish between  $t$ -value and  $p$ -value.
14. Is  $Y_t = \alpha + \beta^T X_t^2 + u$  a linear regression model? Why?
15. Distinguish between estimate and estimator with example.
16. Examine the slope and elasticity coefficient of the model  $y = u + \frac{p}{x}$ .
17. Explain the role of disturbance term in an econometric model? Explain.
18. What is dummy variable trap? How do we avoid the trap?
19. Explain the concept of power of the test.
20. Distinguish between simple and composite hypothesis.

*(5 × 1 = 5 weightage)***Part C***Answer any eight questions.**Each question carries a weightage of 2.*

21. Discuss how decision about rejecting null hypothesis is taken.
22. Discuss Durbin's two step method of estimating  $\rho$ .
23. State the properties of F distribution.
24. Write a note on the Maximum Likelihood Estimator.
25. Explain the concept of omitted variable bias.
26. Briefly explain the steps involved in testing a statistical hypothesis.
27. Discuss the sources of multicollinearity.
28. What do you mean by independently and identically distributed random variable? Explain.
29. Examine regression analysis in the light of ANOVA.
30. Given the estimated saving function as  $S = -510 + 0.15 Y$ . Find the value of investment multiplier.
31. Discuss the methods of detecting heteroscedasticity.

*(8 × 2 = 16 weightage)*

## Part D

*Answer any three questions.  
Each question carries a weightage of 4.*

32. State and prove Gauss Markov theorem.
33. Explain the cases of violation of the assumptions of Classical Regression Model.
34. From the following data set relating to Consumption, C and income, Y estimate propensity to save using a linear regression model assuming that  $Y = C + S$  where S = saving.
- |                                   |    |    |    |    |    |    |    |    |
|-----------------------------------|----|----|----|----|----|----|----|----|
| Consumption (in million rupees) : | 20 | 22 | 25 | 32 | 38 | 40 | 41 | 42 |
| Income (in million rupees) :      | 28 | 30 | 32 | 38 | 40 | 44 | 45 | 47 |
35. State and explain the assumptions of classical linear regression model in matrix form.
36. Examine the general tests used to detect autocorrelation.

(3 x 4 = 12)