



ST. JOSEPH'S COLLEGE (AUTONOMOUS), BENGALURU -27

B.A –VI SEMESTER

SEMESTER EXAMINATION: APRIL 2023

(Examination conducted in May 2023)

ECADE 6318 – BASIC ECONOMETRICS

(For 2022-23 batch students only)

Time: 2 ½ Hours

Max Marks: 70

*This paper contains 2 printed pages and 3 parts
(Scientific calculators are permitted)*

PART-A

I. ANSWER ANY TEN OF THE FOLLOWING QUESTIONS 3x10=30

1. Define Econometrics. What are its objectives?
2. What are Time series and Cross-sectional data?
3. What is the significance of an error term?
4. What are Type I and Type II errors?
5. Distinguish between instantaneous and compound growth rates.
6. State the formula for the Durbin-Watson d statistic.
7. What are the BLUE properties of OLS estimators?
8. To explain what determines the price of air conditioners an econometrician has obtained the following regression results based on a sample of air conditioners.

$$\hat{Y}_i = -68.236 + 0.023X_{2i} + 19.729X_{3i} + 7.653X_{4i}$$

$$S E = \quad (0.005) \quad (8.992) \quad (3.082)$$

$$R^2 = 0.986$$

Where Y = Price in Dollars
X2 = Rating of the air conditioner
X3 = Energy efficiency ratio
X4 = Number of settings
S E = Standard Error

- a) Interpret the regression results.
 - b) Do the results make economic sense?
9. What are null and alternate hypothesis?
 10. State the relationship between R square and Adjusted R square.
 11. A corporate unit, Lucas Tool Rental would like to assign probabilities to the number of car polishers it rents each day. Office records show the following frequencies of daily rentals for the last 40 days. Compute the probability by relative frequency approach.

No. of Polishers rented	0	1	2	3	4
No of days	4	6	18	10	2

12. What is autocorrelation?

PART B

II. ANSWER ANY TWO OF THE FOLLOWING.

2x5=10

13. Briefly, explain the methodology of Econometrics.
14. Based on the information on 1, 000 randomly selected fields about the tenancy status of the cultivation of these fields and use of fertilizers collected in an agro economic survey, the following classification was noted.

	Owned	Rented
Using fertilizers	416	184
Not using fertilizers	64	336

Carry out chi-square test to know whether owner cultivators are more inclined towards the use of fertilizers at 5% level. (The critical value for 1 degree of freedom is 3.84).

15. Ten individuals are chosen at random from a population and their heights are $X=63,63,64,65,66,69,69,70,70,71$
Discuss the suggestion that mean height of the population is 65 by using 't' test. (Critical 't' value for 9 d f at 0,05 level of significance is 2.262)

PART C

III. ANSWER ANY TWO OF THE FOLLOWING

2X15=30

16. The following data gives mean hourly wage (\$) by education derived by the population survey conducted in 1985 for United States.

Years of Schooling (x)	6	7	8	9	10	11	12	13	14	15
Mean wage (Y)	4.4567	5.77	5.9787	7.3317	7.3182	6.5844	7.8182	7.8351	11.0223	10.6738

- (1) Build a two variable regression model of the form
$$Y_i = \beta_1 + \beta_2 X_{2i} + u_i$$
 - (2) Interpret the results.
 - (3) Estimate R Square.
17. What is multicollinearity? What are its consequences? How is it detected? Suggest the remedial measures.
 18. What is heteroscedasticity? Discuss its consequences. What methods do you use to detect it?