

Registration Number:

Date & session:



ST. JOSEPH'S UNIVERSITY, BENGALURU -27
MSc (BIG DATA ANALYTICS) – III SEMESTER
SEMESTER EXAMINATION: OCTOBER 2023
(Examination Conducted in November/December 2023)
BDADE 3521 – INTRODUCTION TO ECONOMETRICS
AND FINANCE
(For current batch students only)

Time: 2 Hours

Max Marks: 50

This paper contains TWO printed pages and THREE parts

PART A

Answer all Questions

5 X 2 =10

- 1 List two assumptions of classical linear regression models.
- 2 Can the residual term be calculated? If yes, how?
- 3 Discuss the unit root test.
- 4 What is a Reduced form equation?
- 5 Describe one characteristic of time-series data.

PART B

Answer any FIVE questions

5 X 4 =20

- 6 Consider the following regression line: $\widehat{Test\ Score} = 698.9 - 2.28 \times \text{Classes-skipped}$. You are told that the t-statistic on the slope coefficient is -4.38.
 - a. What is the standard error of the slope coefficient?
 - b. If the critical value is |2|, what can be concluded about classes-skipped?
- 7 Discuss the concept of identification in Econometrics.
- 8 In the context of Simultaneous Equation models, explain endogenous and exogenous variables.
- 9 What is Granger causality?
- 10
 - a. State conditions required for a valid instrument?
 - b. Why cannot one of these conditions be verified?
- 11 Show that a random walk with drift is stationary.
- 12 A popular test for auto-correlation is the Durbin Watson (DW) test. The DW statistic is given by $d = \frac{(\sum \hat{e}_t - e_{t-1})^2}{\sum \hat{e}_t^2}$ where \hat{e}_t is the residual. What is the intuition behind why $d=2$ implies no auto-correlation?

PART C

Answer any TWO questions

2 X 10 =20

- 13 (a) Discuss the Hausman test in the context of testing between Fixed Effects model and Random Effects model. 5
- 13 (b) Let X be the explanatory variable and u the error term. If $E(Xu) \neq 0$ i.e X and error term are correlated. 5
- i. What does this mean for the OLS model?
 - ii. Suggest a potential solution.
- 14 (a) i. Discuss the concept of stationarity in time-series data. 6
- ii. What conditions are required for stationarity of a time-series data?
- 14 (b) Discuss the Method of Moments and GMM. 4
- 15 i. What is time series data? 2 + 8
- ii. Write a note on Box Jenkins methodology.