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

**B.Sc (ECONOMICS)– IV SEMESTER**

**SEMESTER EXAMINATION: APRIL 2023**

**(Examination conducted in May 2023)**

**ECS 4222 – TIME SERIES ECONOMETRICS**

**(For 2022-23 batch students only)**

**Time: 2 Hours Max Marks: 60**

**This paper contains 1 printed pages and 3 parts**

**PART-A**

**Answer any ten [3x10 = 30]**

1. Give an example of time series data. Discuss autocorrelation which is a common feature of time series data.
2. Give an example of an auto-regressive distributed lag model of order 1 i.e. ADL(1,1).
3. What is the economic idea that the distributed lag model captures?
4. Give a moving average representation for a time series process.
5. Given $Y\_{t }= α\_{0 } + β\_{0} X\_{t} + λ Y\_{t-1}+ u\_{t} ; $use recursive substitution to write the model in terms of lagged X terms.
6. What is the phenomenon of spurious regressions?
7. State the conditions required for stationarity.
8. Show that the random walk *with drift* is not stationary.
9. What is meant by “difference stationarity”?
10. What is a co-integrated process?
11. Discuss ACF- the graphical method to test for stationarity.
12. Describe the unit root test.

**PART-B**

**Answer any three [5x3 = 15]**

1. Explain the Partial Adjustment model($Y\_{t }-Y\_{t-1}= λ[Y^{\*}\_{t}^{}- Y\_{t-1 }]$).
2. Discuss the Error Correction Model.
3. Discuss Granger causality.
4. Discuss the Augmented Dickey Fuller test.
5. One cause of non-stationarity is structural break. Discuss the main idea behind Chow test to test for it.

**PART-C**

 **Answer any one [15x1 = 15]**

1. Describe the ARIMA (Box-Jenkins) method for estimating time-series data.
2. Show that if the error term in a distributed lag model has serial correlation then OLS estimation is biased.