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

**M.A ECONOMICS – IV SEMESTER**

**SEMESTER EXAMINATION: APRIL 2023**

**(Examination conducted in May 2023)**

**EC 0118: ADVANCED ECONOMETRICS**

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

**Time: 2 ½ Hours Max Marks: 70**

**This paper contains 2 printed pages and 3 parts**

**PART-A Answer any five [5x2 = 10]**

1. Give an example of time series and one of panel data.
2. Why can we not use a regular t-test to test for unit root?
3. State conditions required for a variable to be a valid instrument.
4. Discuss any two limitations of the Linear Probability Model (LPM).
5. When is the Fixed Effects model preferred over Random Effects?
6. What is cointegration?
7. What is the objective of the Almon distributed lag model?

**PART-B Answer any three [3x10 = 30]**

1. Discuss Granger causality.
2. Describe the Hausman test which can be used to test for simultaneity and is often used to test for endogeneity.
3. Discuss ARIMA model.
4. Discuss the bias in an AR(1) model if errors are serially correlated.
5. Describe the need and implementation of the Instrumental Variable Estimation.

**PART-C Answer any two [2x15 = 30]**

1. Discuss the Adaptive Expectations model where expectation of X is as follows:

$(X\_{t+1}^{e}-X\_{t}^{e}) =γ (X\_{t}- X\_{t}^{e})$ and the outcome variable is given by $Y\_{t}=γ\_{1}+γ\_{2}X\_{t+1}^{e}+u\_{t} .$

Simplify and show how we estimate this model.

1. Discuss the Logit model.
2. Consider the following simultaneous equation model for demand and supply of butter where C and Y (Consumption and Income) are endogenous while Investment is exogenous:

$C\_{t}= β\_{0}+ β\_{1}Y\_{t}+u\_{1t}$

$Y\_{t}=α\_{0} + α\_{1}Investment\_{t}+u\_{2t}$

* 1. What is implied if a variable is exogenous?
	2. State the order condition and discuss which of the two equations above, if any, are identified.