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Register Number:

DATE:

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

**M.A. ECONOMICS- IV SEMESTER**

**SEMESTER EXAMINATION: July 2022**

**EC 0118: Advanced Econometrics**

**Time: 2.5 Hours Maximum Marks-70**

**This question paper has 2 printed page and 3 parts**

**Part A. Answer any five of the following: 2 X 5=10**

1. Give the specification of the distributed lag model and the auto-regressive model.
2. What is the odds-ratio?
3. Discuss Granger causality?
4. What two conditions must an instrument (IV) must satisfy?
5. What is stationarity?
6. In the context of time-series analysis, what is a co-integrated process?
7. What method is used to estimate a Logit or Probit model? Give desirable properties of these estimators.

**Part B. Answer any three of the following: 10 X 3 =30**

1. Describe the ARIMA (Box-Jenkins) method for estimating time-series data.
2. What is the identification issue in econometrics? Briefly describe the order condition in simultaneous equation models.
3. Describe the Hausman test which can be used to test for simultaneity and is often used to test for endogeneity in panel data models.
4. What is a random walk without a drift model? Show it is not stationary.
5. Write a note on panel data models.

**Part C. Answer any two of the following: 15 X 2 =30**

1. The Adaptive Expectations for X is given by: $(X\_{t}^{\* }-X\_{t-1}^{\* }) =γ (X\_{t}^{ }-X\_{t-1}^{\* })$. We want to model the outcome variables as $Y\_{t }= α+ β\_{ }X\_{t}^{\* }+u\_{t}$[all the starred terms ($X\_{t}^{\* })$ are expectations and not observable.

How do we estimate $β$?

1. Consider the following simultaneous equation model for demand and supply of butter where Q and P are endogenous:

$$Q\_{t}^{d}= β\_{0}+ β\_{1}P\_{t}+β\_{2}Income\_{t}+u\_{1t}$$

$$Q\_{t}^{s}= β\_{0}+ β\_{1}P\_{t}+u\_{2t}$$

* 1. What is the simultaneity problem?
	2. Write the Reduced form equations
	3. Using the order condition, is either equation identified? Which one?
	4. Contrast the Logit/Probit model with the Linear Probability model.
	5. What is the intuition behind using a cumulative function?
	6. Mortgage denial (deny) is explained using Payment-to-income ratio (PI ratio) and gender (Female), and get the following fitted result:

$$\hat{Deny}= F(-4.13+5.37\*PI ratio+1.27 Female)$$

Without any calculations, what we can say about the qualitative impact of PI ratio on being denied a mortgage.