

M.A. Examination, 2024
Semester-IV
Economics
Course: OP-14 (Optional)
(Advanced Econometrics-II)

Time: 3 Hours

Full marks: 40

Questions are of value as indicated in the margin

Answer question no. 1

1. Examine whether the following statements are True, False or Uncertain and give brief explanation:
 - (a) The Random Walk Model with drift represents a stationary stochastic process.
 - (b) Differencing method is employed to run a regression that involves time series variables which are trend stationary.
 - (c) The ECM reconciles the short run behaviour of an economic variable with its long run behaviour.
 - (d) For an MA (2) model, the ACF will decline geometrically and the PACF will drop off to zero after two lag periods.

4 X 4 =16

Answer question no. 2 or question no. 3

2. Consider the data on GDP and Savings in India for the period 1980 -2020.
 - (a) How you would examine the stationarity of these data using appropriate method?
 - (b) In the context of these data, explain the concept of cointegration. Discuss how you would test for cointegration between the variables using the Engle–Granger approach.
 - (c) Show that an autoregressive process has infinite memory.

4+4+4=12

3. Empirical literature indicates a causal relation between government revenue (REV) and expenditure (EXP) in India.
 - (a) How do you estimate the VAR model with the above two variables?
 - (b) How do you examine the direction of causality between government revenue and expenditure in India?
 - (c) What is meant by the ARCH effect?
 - (d) Explain Engle's procedure of examining the presence of ARCH (p) effects in time series data.

4 +4+1+3 =12

Answer question no. 4 or question no. 5

4. (a) What are the advantages of constructing a panel of data rather than using pooled data?

- (b) How do the Within-Group Estimator (WGE) and First-Difference Estimator (FDE) deal with the limitation of the Fixed Effect Model?
- (c) How does the random effect model capture unobserved cross-sectional heterogeneity. Explain with an example.

$$2+5+5 = 12$$

5. (a) Suppose you are asked to identify some determinants of productivity in Indian agriculture. From past literature on the subject, you learnt that agricultural productivity is related to irrigation and rural literacy rates. Suppose you compiled data on agricultural productivity (AGP), irrigation (IRRI) and rural literacy rate (LIT) for 15 major states of India for four different periods. Specify an appropriate panel regression model to identify the main determinants of agricultural productivity.
- (b) How would you estimate such a model?
- (c) How would you justify appropriateness of your specified model?

$$3+6+3=12$$