PG (CBCS) EVEN SEMESTER EXAMINATION, 2024

ECONOMICS

4th Semester

Course No. : ECOCC - 404 (O)

(Advanced Econometrics)

Full Marks : 70

Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

(Answer five questions taking one from each unit)

UNIT-I

1. (a) On the basis of a 2-equation simple keynesian model explain structural and reduced form equations.

   (b) Explain the problem of identification on the basis of a linear demand supply system with speical reference to mongrel equation.

   (c) Verify the rank and order conditions for identification of the first equation for the following demand-supply model.

$$Q^d = \beta_0 + \beta_1 p + u_1$$

$$Q^s = \alpha_0 + \alpha_1 p + \alpha_2 w + u_2$$

   and $Q^d = Q^s$, where all symbols have their usual meanings. 4+4+6=14

8. Write short notes on any two : 7x2=14

   (a) Lagged time series models

   (b) Partial stock adjustment

   (c) Adaptive expectations.

UNIT-V

9. (a) Outline the LSDV model for panel data. How would you test for the structural superiority of LSDV vis-a-vis the pooled estimator?

   (b) Explain the working of a random effects model by means of feasible GLS estimator. 7+7=14

10. Write short notes on any two of the following: 7x2=14

   (a) Hausman test for correlated random effects

   (b) SURE model

   (c) Random effects in panel data.

★★★

2. Write short notes on any two of the following :

7x2=14

(a) Simultaneous equation bias

(b) Two stage least squares

(c) Indirect least squares

UNIT-II

3. (a) Show that an AR(1) process is a stationary stochastic process.

(b) Plot the correlogram for y_t where

$$y_t = 10.2 + 0.7\, y_{t-1} + \epsilon_t$$

(ϵ_t is a white random noise)

(c) Distinguish between trend stationary and difference stationary process on the basis of the model,

$$y_t = \alpha + \varphi u_{t-1} + \nu.t + \epsilon_t$$

(d) Outline the steps for detection of unit root by means of the Augmented Dickey-Fuller Test.

4+3+3+4=14

4. (a) What is an ARMA model? Find the expressions for mean and variance for an ARMA (1, 1) model.

(b) When are two variables said to be cointegrated? Hence define co-integrating vector and co-integrating parameter.

(c) Outline the Engle-Granger 2 step procedure for testing co-integration. 6+2+6=14

UNIT-III

5. (a) Suppose you are given quarerly data for sales of T-shirts made by 4 different makers or brands. If five years of data are given, construct suitable models with the help of independent dummy variables to test the following :

(i) sales of T-shirts vary across seasons

(ii) sales of T-shirts vary acros brands.

(b) In an educational study you are required to examine the hours spent in reading non-fiction (y) by arts, commerce and science students in a college. Construct an appropriate independent dummy variable model such that you can test for the difference in hours of non-fiction reading across streams where the null hypothesis is that of no difference. 4+4=6=14

6. Write short notes on any two of the following:

7x2=14

(a) Logit model

(b) Structural shift testing using dummy variables

(c) Goodness of fit in limited dependent variable models.

UNIT-IV

7. (a) Explain mean lag, median lag and impact multiplier in a lagged regression.

(b) Outline the Koyck lagged model of regression. Verify whether the errors are serially correlated in such a model. 7+7=14