

(P.T.O.)

12. Which of the following is a key feature of ARIMA models?
 - a) They require nonstationary data
 - b) They combine differencing with AR and MA components
 - c) They are exclusively for short time series
 - d) They focus on volatility modeling
13. What is the name of the statistical test that can help us determine whether to choose a fixed effects or a random effects model?
 - a) Hausman test
 - b) z-test
 - c) chi square test
 - d) Link-Wallace test
14. What is the key feature of Sims' Vector Autoregression (VAR) model?
 - a) It assumes all variables are exogenous.
 - b) It treats all variables symmetrically without a prior classification as endogenous or exogenous.
 - c) It only applies to microeconomic models.
 - d) It ignores time series data.
15. Which statistical criteria are commonly used to determine the optimal lag length in time series models?
 - a) F-test and Z-test
 - b) Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC)
 - c) Durbin-Watson Statistic and Chi-square test
 - d) Mean and standard deviation

(15 × 1/5 = 3 weightage)

Part B: Answer any five questions. Each carries one weightage.

16. Define the Linear Probability Model (LPM) and mention one limitation.
17. What is the Tobit model, and in what situations is it used?
18. Elaborate on Panel data.
19. What is simultaneous equation bias?
20. Define a stationary stochastic process.
21. What is the difference between endogenous and exogenous variables?
22. Write a note on spurious regression.
23. What is meant by a MA(1) model?

(5 × 1 = 5 weightage)

Part C: Answer any seven questions. Each carries two weightage.

24. Distinguish between logit and probit models.
25. Compare fixed effects and random effects models in panel data analysis.
26. Explain how the Durbin h test is used to detect autocorrelation in lagged dependent variable models.
27. Compare limited and full information methods in simultaneous equation estimation.
28. Analyze the role of recursive models in simultaneous equation systems.
29. Describe the procedure for conducting a Dickey-Fuller test for unit roots.
30. Explain the steps to differentiate between a trend-stationary process and a difference-stationary process.
31. Explain the limitations of ARCH models and how GARCH models address them.
32. "If the primary object is forecasting, VAR will do the job." Critically evaluate this statement.
33. Write a note on adaptive expectation model.

(7 × 2 = 14 weightage)

Part D: Answer any two questions. Each carries four weightage.

34. Stock adjustment model is a rationalisation of Koyck model. Explain.
35. Analyze the concepts of cointegration and error correction models, highlighting their role in addressing long-run equilibrium relationships and short-run adjustments in time series econometrics.
36. Discuss the Box-Jenkins methodology in detail, highlighting the steps of model identification, parameter estimation, and diagnostic checking.
37. Discuss the problem of identification.

Consider the following Keynesian model of income determination.

$$C_t = \beta_1 + \beta_2 Y_t - \beta_3 T_t + U_{1t}$$

$$I_t = \alpha_0 + \alpha_1 Y_{t-1} + U_{2t}$$

$$T_t = \gamma_1 + \gamma_2 Y_t + U_{3t}$$

$$Y_t = C_t + I_t + G_t$$

where,

C = consumption expenditure

Y = income

I = investment

T = taxes

G = government expenditure

u's = the disturbance terms

By applying the order condition, check the identifiability of each of the equations in the system.

(2 × 4 = 8 weightage)