

D6BEM2301

Reg. No.....

Name:

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2026

(Regular/Improvement/Supplementary)

ECONOMICS & MATHEMATICS (DOUBLE MAIN)

GDEC6B08T: ECONOMETRICS II

Time: 2 Hours

Maximum Marks: 60

SECTION A: Answer the following questions. Each carries two marks.

(Ceiling 20 marks)

1. What is the Koyck approach, and how does it address distributed lag models?
2. How can you input and manage panel data in EVIEWS or STATA?
3. List two advantages of using panel data over purely cross-sectional or time-series data.
4. What is meant by time-invariant variables, and why they cannot be included in a fixed effects model?
5. What is the difference between the rank condition and the order condition in identifying simultaneous equations?
6. Briefly describe the concept of instrumental variables in simultaneous equation methods.
7. How does the method of two-stage least squares (2SLS) address simultaneity bias?
8. State the purpose of using an instrumental variable in regression analysis.
9. Mention the main advantage of using the random effects model over the fixed effects model.
10. How is unobserved heterogeneity addressed in the fixed effects model?
11. Why is the presence of unit roots in a time series problematic for regression analysis?
12. Briefly explain the difference between trend stationary and difference stationary processes.

SECTION B: Answer the following questions. Each carries five marks.

(Ceiling 30 marks)

13. You are tasked with predicting whether an individual defaults on a loan (0 = no default, 1 = default) based on their credit score. Explain how you would apply the Logit Model to this problem, detailing the steps from data preparation to interpreting the model output.

(PTO)

14. Given a regression model with potential endogeneity in X_1 , explain how you would construct and use an instrumental variable regression with Z_1 as an instrument for X_1 , and interpret the results.
15. Suppose you are estimating a simultaneous equation model for supply and demand, and you suspect simultaneity bias. Explain how you would apply the two-stage least squares (2SLS) method to estimate the parameters.
16. For the following simultaneous equation system:
- $$Q_d = \alpha_0 + \alpha_1 P + \alpha_2 I + u_1$$
- $$Q_s = \beta_0 + \beta_1 P + \beta_2 W + u_2$$
- Explain how you would determine whether these equations are identified, using both the order condition and the rank condition.
17. What is the Probit Model? How does it differ from the Logit Model in terms of assumptions and applications?
18. You are estimating a general IV model with multiple instruments. Explain how you would check the validity of the instruments in terms of relevance and exogeneity.
19. You want to test for heteroscedasticity in a regression model using STATA. Describe the procedure and explain how you would interpret the test results.

SECTION C: Answer any *one* question. The question carries *ten* marks.

20. Discuss the adaptive expectations model and the stock adjustment model. Explain how these models incorporate lagged behaviour in economic relationships.
21. Suppose you suspect spurious regression between two non-stationary time series X_t and Y_t . Explain how you would apply cointegration analysis and an error correction model to address the issue and ensure meaningful regression results.

(1 × 10 = 10 Marks)