



NATIONAL OPEN UNIVERSITY OF NIGERIA
FACULTY OF SOCIAL SCIENCES
DEPARTMENT OF ECONOMICS
2024 1 EXAMINATION

COURSE TITLE: APPLIED ECONOMETRICS
COURSE CODE: ECO 453
CREDIT UNITS: 2 UNITS
TIME ALLOWED: 2 HOURS
INSTRUCTION: ANSWER QUESTION ONE AND ANY OTHER TWO (2) QUESTIONS

QUESTION ONE

- 1a. List the assumptions of the nonlinear regression (4 marks)
1b. List and explain the two (2) most common methods used in obtaining nonlinear parameter estimates (4 marks)
1c. Determine if the following AR processes are stationary, unit root or explosive
i. $y_t = 0.5y_{t-1} + \varepsilon_t$
ii. $y_t = 1.5y_{t-1} + \varepsilon_t$
iii. $y_t = y_{t-1} - 0.25y_{t-2} + \varepsilon_t$
iv. $y_t = 1.5y_{t-1} - 0.5y_{t-2} + \varepsilon_t$ (19 marks)
1d. Define the term "Autoregressive" (AR) (3 marks)

QUESTION TWO

- 2a. A researcher with a sample size of 100 observations performed an ADF test and obtained the following results (standard errors in parentheses). What can you conclude about the stationarity of y_t ? The 5% critical value for the test is -2.89
a. $\Delta y_t = 5.16 - 0.78y_{t-1} - 0.02\Delta y_{t-1}$
(0.71) (0.10) (0.08)
b. $\Delta y_t = 1.80 - 0.65y_{t-1}$
(0.29) (0.65)
3. $\Delta y_t = 0.53 - 0.94y_{t-1} + 0.14\Delta y_{t-1} - 0.1\Delta y_{t-2}$
(0.43) (0.30) (0.04) (0.04) (6 marks)
2b. Explain the crucial distinction between fixed and random effects (2 marks)
2c. With the aid of a table, explain the differences between the fixed and random effect models (12 marks)

QUESTION THREE

- 3a. List and explain the 5 cases provided for testing the co-integrating bound test according to Pesaran et al. (2001) (5 marks)
3b. Define the ARDL model (2 marks)
3c. Explain the advantages the ARDL has over conventional Johansen co-integration techniques (5 marks)
3d. Discuss the steps in estimating a panel equation in E-views (8 marks)