NATIONAL OPEN UNIVERSITY OF NIGERIA
FACULTY OF SOCIAL SCIENCES
DEPARTMENT OF ECONOMICS
2025_2 EXAMINATIONS

COURSE TITLE: **INTRODUCTION TO ECONOMETRICS II**
COURSE CODE: **ECO 356**
CREDIT UNITS: **3 UNITS**
TIME ALLOWED: **3 HOURS**
INSTRUCTION: **ANSWER QUESTION ONE AND ANY OTHER THREE (3) QUESTIONS**

QUESTION ONE

a. Samples of malaria patients in Kano and Enugu are provided below. The study collects data on malaria patients in Kano and Enugu from February to July, aiming to determine the sample variations between the two states.   **15marks**

Months	Feb	Mar	Apr	May	June	Jul
Kano(X)	3	1	2	2	3	1
Enugu(Y)	5	3	8	4	7	9

b.   i. What does correlation (r) measures?   **5marks**
ii. Interpret correlation coefficient when; r= 1, r = -1 and r= 0.   **5marks**

QUESTION TWO

a. i. Define a random variable   **2marks**
ii. Differentiate between a discrete and continuous variable   **4marks**
iii. Differentiate between Sample and Sample survey   **2marks**
b. Define clearly the following terms.
i. Covariance   **3marks**
ii. Population covariance   **4marks**

QUESTION THREE
a. Describe the following terminologies in econometrics:
i.   Dummy Variable   **3marks**
ii.   Structural model   **3marks**
b. i. Define Simultaneous equation model.   **4marks**

ii. State the essential features of simultaneous equation model.   **5marks**

QUESTION FOUR

    a. Describe the term Autocorrelation.   **2marks**
    b. State the possible causes of autocorrelation in a model.   **8marks**
    c. "The sample distribution of d in Durbin-Watson (DW) test for Autocorrelation depends on the values of explanatory variables and the DW derived from upper limits (du) and lower limits (dL) for the significance level of d". Interpret DW test for Autocorrelation if
        i. $d < d_L$ or $d > 4 - d_L$ **1mark**
        ii. $d > d_U$ or $d < 4 - d_U$ **1mark**
        iii. $d_L < d < d_U$ or $4 - d_U \le d \le 4 - d_L$ **1mark**
    d. Without mathematical expression, describe Adaptive Expectation Model (AEM). **2marks**

QUESTION FIVE

    a. State the five (5) assumptions that underpins multiple regression analysis. **5marks**
    b. Briefly define the term Multicollinearity.   **2marks**
    c. Briefly discuss methods of solving multicollinearity problem in a regression model
                                                                              8marks

QUESTION SIX

6a. Explain in detail the term Durbin-Watson Test. **(10 Marks)**
6b. Define the following concepts **(5 Marks)**

    i.   Element

    ii.   Population