**NATIONAL OPEN UNIVERSITY OF NIGERIA**
**FACULTY OF SOCIAL SCIENCES**
**DEPARTMENT OF ECONOMICS**
**2025_1 EXAMINATION**

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|---|---|
| **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. What is the meaning heteroscedasticity in a regression model? **(5 Marks)**
b. Describe the consequences of heteroscedasticity in a regression model. **(5 Marks)**
c. The Spear-Man rank correlation test is a technique of detecting heteroscedasticity in a regression model. Using the data below, test the present of heteroscedasticity.

| | | | | | |
|---|---|---|---|---|---|
| X | 5 | 6 | 8 | 12 | 15 |
| E | 0.59 | 2.48 | 1.54 | 1.98 | 3.24 |

Where X is the independent variable and e is the estimated residual. (**15 Marks)**

## QUESTION TWO

2a. Explain the term econometrics. What are the main objectives of econometrics? **(6 Marks)**
2b. Distinguish between theoretical econometrics and applied econometrics. **(5 Marks)**
2c. The basic limitations associated with correlation analysis. **(4 Marks)**

## QUESTION THREE

a. Write short notes on ONLY five (5) of the following:

i. Element ii. Population iii. Sampling unit
iv. Frame v. Sample vi. Census **(1 Mark each)**

b. Itemize the five (5) properties of ordinary least squares (OLS) **(5 Marks)**

c. List the reasons for inclusion of disturbance term in regression models. **(5 Marks)**

**QUESTION FOUR**

4a. With clear example, explain the concept of dummy variables. **(3 Marks)**

4b. What is dummy variable trap? **(4 Marks)**

4c. Discuss the consequences associated with model misspecification. **(4 Marks)**

4d. State the Gauss-Mavkov condition on heteroskedasticity. What are the effects of heteroskedasticity? **(4 Marks)**

**QUESTION FIVE**

**5a.** Given: $\mathbf{e_i^2 = y_1 - \beta_1 X_1 - \beta_2 X_2}$, derive the parameters for $\beta_1$ and $\beta_2$ **(10 Marks)**

**5b**. Differentiate between linear model transformation and non-linear model transformation. **(5 Marks)**

**QUESTION SIX**

6a. Discuss five (5) of the following terminologies in Econometrics **(10 Marks)**

*i.* A random variable

*ii.* A discrete random variable

*iii.* A continuous random variable

*iv.* A sample survey

*v.* Covariance

*vi.* Population covariance:

6b. State the consequences of measurement errors in regression analysis. **(5 Marks)**