NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF MANAGEMENT SCIENCES

DEPARTMENT OF ACCOUNTING ECONOMICS AND FINANCE

QUALIFICATION: BACHELOR OF ECONOMICS HONOURS DEGREE	
QUALIFICATION CODE: 08HECO	**LEVEL:** 8
COURSE CODE: AEM810S	**COURSE NAME:** APPLIED ECONOMETRICS
SESSION: JULY 2019	**PAPER:** THEORY
DURATION: 3 HOURS	**MARKS:** 100

SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Prof Tafirenyika Sunde
MODERATOR:	Dr Reinhold Kamati

INSTRUCTIONS
1. Answer ALL the questions. 2. Write clearly and neatly. 3. Number the answers clearly.

PERMISSIBLE MATERIALS

1. Ruler
2. Calculator

THIS QUESTION PAPER CONSISTS OF 3 PAGES INCLUDING THE FIRST PAGE

QUESTION 1 [25 MARKS]

a) Discuss the circumstances under which the following methods of estimating regression equation are used. NB: You are expected to state what the abbreviation stands for before you answer the question.

(i) OLS

(ii) AR

(iii) ECM

(iv) ARDL (p, q)

(v) VAR (p)

QUESTION 2 [25 MARKS]

a) Use the variables Y and X to state:

(i) An ARDL (p, q) for stationary variables.

(ii) An ARDL (p, q) when Y and X have unit roots but are not cointegrated.

(iii) An ARDL (p, q) when Y and X are cointegrated.

b) State the **hypotheses** and **the decision rule** that you use to test for Granger causality in equations (ii) and (iii) in (a).

QUESTION 3 [25 MARKS]

a) Given the following ARDL(1, 1, 1) equation:

$$Y_t = m + a_1 Y_{t-1} + b_0 X_t + b_1 X_{t-1} + c_0 Z_t + c_1 Z_{t-1} + e_t$$

(i) Which parameters are short-run multipliers?

(ii) Which parameters are instant multipliers?

(iii) State the long run equation.

(iv) State the formula used to calculate the long run multiplier with respect to X

(v) State the formula used to calculate the long run multiplier with respect to Z

b) Use the output in the Table to answer the following questions:

$$Y_t = 100 + 0.5Y_{t-1} + 0.2X_t + 0.1X_{t-1} + 0.3Z_t + 0.1Z_{t-1} + e_t$$

(i) What is the instantaneous multiplier of X?

(ii) What is the instantaneous multiplier of Z?

(iii) What is the cumulative short-run multiplier of X after one (1) period?

(iv) What is the cumulative short-run multiplier of Z after one (1) period?

(v) What is the long run multiplier of Y with respect to X?

(vi) What is the long run multiplier of Y with respect to Z?

QUESTION 4 [25 MARKS]

Suppose you want to test for the Dynamic Granger causality between GDP (Y) and financial development (FD) whose model is given as follows:

$$\Delta Y_t = \lambda_0 + \sum_{i=1}^{n} \lambda_{1i} \Delta Y_{t-i} + \sum_{i=1}^{n} \lambda_{2i} \Delta \mathrm{FD}_{t-1} + \mu_{1t} \qquad (1)$$

$$\Delta \mathrm{FD}_t = \varphi_0 + \sum_{i=1}^{n} \varphi_{1i} \Delta Y_{t-i} + \sum_{i=1}^{n} \varphi_{2i} \Delta \mathrm{FD}_{t-1} + \mu_{2t} \qquad (2)$$

(i) What conditions should be met for unidirectional causality from FDI to GDP?

(ii) What conditions should be met for unidirectional causality from FDI to GDP?

(iii) What conditions should be met for bidirectional causality between FDI and GDP?

(iv) What condition should be met for there to be independence between FDI to GDP?

(v) State the two-hypothesis used to do the tests in (i) to (iv).