



MAASAI MARA UNIVERSITY

REGULAR UNIVERSITY EXAMINATIONS 2018/2019 ACADEMIC YEAR FIRST YEAR SECOND SEMESTER

SCHOOL OF SCIENCE Msc. STATISTICS

COURSE CODE: STA 8214

COURSE TITLE: TIME SERIES ANALYSIS

DATE: 17-4-2019

TIME: 11:00AM-2:00PM

INSTRUCTIONS TO CANDIDATES

1. Attempt ALL questions

Question I(15 Marks)

- a. Explain any five stylized facts about time series variable and explain its impact on OLS estimates.
- b. Define two forms of stationarity
- c. Explain the concept of “the drunk and Her Dog” and its contribution to the understanding of time series analysis
- d. Two time series variables are assumed to be non stationary, but integrated of the same order. Exploit all possible permutations and how each condition should be handled

Question II(15 marks)

Given two stationary time series variables Y_t and X_t and assuming a one lag VAR, derive and interpret:

- i. Impulse response function
- ii. Variance decomposition function

Question III(15 marks)

- i. Given $Y_t = \rho_1 Y_{t-1} + e_t$ (WHERE $\rho = 1$) derive
 - a. Mean of Y_t
 - b. $\text{Var}(Y_t)$
 - c. $\text{CoV}(Y_t, Y_{t-1})$
- ii. Show the effect of differencing on the stationarity condition of i.

Question IV(15 marks)

Assuming a model $Y_t = \alpha + \sum_{i=0}^p b_i X_{t-i} + \varepsilon_t$ and that both Y and X are I(1) and cointegrated.

- i. Explain the issue with estimating both Long term and Short term models separately
- ii. Derive ECM
- iii. Interpret the coefficients of ECM

//END