



MACHAKOS UNIVERSITY

University Examinations for 2016/2017 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF ECONOMICS

**FOURTH YEAR FIRST SEMESTER EXAM FOR
BACHELOR OF SCIENCE IN MATHEMATICS (STATISTICS AND
PROGRAMMING)**

SST 404: ECONOMETRICS II

DATE: 3/8/2017

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

Answer Question One and Any Other Two Questions

QUESTION ONE (30 MARKS)

- (a) Write notes on the following
- (i) Lagged Endogenous variable (4 marks)
 - (ii) Exogeneity (4 marks)
 - (iii) Hypothesis testing (4 marks)
 - (iv) Direct effects (4 marks)
 - (v) Global maximum (4 marks)
- (b) Using an econometric of your choice distinguish between order and rank condition in identification (10 marks)

QUESTION TWO (20 MARKS)

Derive asymptotic properties for

- (i) OLS (10 marks)
- (ii) Method of Moments (10 marks)

QUESTION THREE (MARKS)

- (a) (i) Explain multicollinearity (4 marks)
(ii) How is multicollinearity detected (5 marks)
(iii) How is the problem solved (5 marks)
- (b) Explain the procedure involved in 2SLS (6 marks)

QUESTION FOUR (20 MARKS)

- (a) Consider the following system of simultaneous equations:

$$C = \alpha + \beta Y + u$$

$$Y = C + I$$

Where C is aggregate consumption, Y is the level of national income, I is investment expenditure, α and β are parameters such that $\alpha > 0$, $0 < \beta < 1$ and u is the disturbance term.

- (i) Obtain the reduced form equations (8 marks)
(ii) Assuming that the reduced form equations for the above equations are given as follows:

$$C = 35 + 4I + v_{1t}$$

$$Y = 35 + 5I + v_{2t}$$

Obtain the structural coefficients α and β from the reduced form equations above

(5 marks)

- (b) Obtain the relationship between the reduced form coefficients (7 marks)

QUESTION FIVE (20 MARKS)

Consider the following simultaneous equation model:

$$Y_{1t} = \beta_{10} + \beta_{12}Y_{2t} + \alpha_{11}X_{1t} + u_{1t}$$

$$Y_{2t} = \beta_{20} + \beta_{21}Y_{1t} + \alpha_{22}X_{2t} + u_{2t}$$

- (a) Obtain the reduced-form equations for this model (5 marks)
(b) What is the relationship between the reduced-form coefficients from (a) above, and the structural coefficients? (7 marks)
(c) Given that the estimated reduced-form equations are as follows (error terms are now omitted):

$$Y_{1t} = 4 + 3X_{1t} + 8X_{2t}$$

$$Y_{2t} = 2 + 6X_{1t} + 10X_{2t}$$

Obtain the values of the structural parameters (coefficients) (8 marks)