



# MACHAKOS UNIVERSITY

University Examinations for 2018/2019 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF ECONOMICS

FOURTH YEAR SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN STATISTICS AND PROGRAMMING

SST 405: ECONOMETRICS III

DATE: 23/7/2019

TIME: 11:00 – 1:00 PM

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## INSTRUCTIONS:

- i) Answer question ONE and any other TWO questions. Question one carries 30 marks and the other questions carry 20 marks each.
- ii) Do not write on the question paper

1.
  - a) What are the weaknesses of linear regression? (4 marks)
  - b) You are given the following Stata output (Table 1) of probit model on the effect of non-farming activities of farmers welfare in country K.

**Table 1: Probit estimation results of off-farm participation and welfare**

| Variable                         | Model 5  |         | Model 6   |         |
|----------------------------------|----------|---------|-----------|---------|
| <i>Household characteristics</i> |          |         |           |         |
| Gender of household head         | 0.086    | (0.078) | 0.178***  | (0.040) |
| Age of household head (years)    | 0.006*** | (0.001) | -0.001    | (0.001) |
| Formal education: Household Head | 0.167*** | (0.025) | -0.134*** | (0.049) |
| Household size (log)             | 1.429*** | (0.027) | -0.226*** | (0.038) |
| <i>Plot characteristics</i>      |          |         |           |         |
| Title                            | 0.153**  | (0.065) | 0.098***  | (0.028) |
| Fair soil                        | 0.002    | (0.038) | -0.018    | (0.051) |
| Good soil                        | 0.088**  | (0.043) | -0.089*   | (0.051) |

### Resources

|                                        |           |         |           |         |
|----------------------------------------|-----------|---------|-----------|---------|
| Land size in acres (log)               | 0.059***  | (0.012) | 0.028**   | (0.014) |
| Number of farm productive assets (log) | 0.197***  | (0.020) | 0.123***  | (0.024) |
| Access to credit                       | 0.128*    | (0.067) | 0.184**   | (0.075) |
| Remittance                             | 0.316***  | (0.045) | 0.135***  | (0.051) |
| Extension services                     | 0.048     | (0.031) | -0.014    | (0.038) |
| Farm labour hire                       | 0.182***  | (0.027) | -0.217*** | (0.045) |
| Improved seed                          | 0.048*    | (0.026) | 0.014     | (0.031) |
| Constant                               | 10.046*** | (0.136) | 10.734*** | (0.123) |
| Observations                           | 4382      |         | 2890      |         |

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Standard errors in parentheses

Note Statistical Significance at 99 (\*\*\*), 95% (\*\*) and 90% (\*) confidence levels. The number in brackets show standard errors.

**Required:** Interpret these findings and explain policy implication. (20 marks)

c) Justify the application of shadow pricing in project planning and scheduling.

(6 marks)

2. A simple economy with two sectors has Leontief input-output matrix:

$$A = \begin{pmatrix} 0.4 & 0.1 \\ 0.1 & 0.6 \end{pmatrix}$$

If consumers demand for the first sector is \$8M and for the second sector is \$ 5 M.

i) Find the gross output of the two sectors (10 marks)

ii) Derive the comparative statistic matrix and indicate what it represents. (4 marks)

iii) Explain the importance of Leontief Model to the Kenyan economy. (6 marks)

3. a) Using examples, discuss rational expectation theory. (8 marks)

b) Suppose the value of Variable Y in period t is determined by its owned lagged value and by lagged values of other variables X and Z. Explain the process of determining Y expectation using expected error (v). (8 marks)

c) Explain the cost of unexpected inflation in the economy. (4 marks)

4. a) Using well labelled diagrams, discuss the effect of minimum wages on unemployment. (10 marks)
- b) Critically analyse Harrod-Domar Model while giving its assumptions. (10 marks)
5. a) State and explain Okun's Law (4 marks)
- b) Suppose an economy has the following Philip's curve:  $\pi_t = \pi_{t-1} - 0.4(\mu - 0.07)$ , where;  $\pi_t$  is the inflation rate at time  $t$ , and  $\mu$  is the rate of unemployment.
- i) What is the natural rate of unemployment? (4 marks)
- ii) How much of cyclical unemployment is necessary to reduce inflation by 8% points? (4 marks)
- iii) Distinguish between Classical and Keynesian school of thoughts on unemployment. (8 marks)