



# MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF ECONOMICS

FIRST YEAR FIRST SEMESTER EXAMINATION FOR

MASTER OF SCIENCE (AGRICULTURAL EDUCATION AND EXTENSION)

AGB 801: AGRICULTURAL MICRO-ECONOMICS

DATE: 16/12/2019

TIME: 9.00-12.00 PM

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**INSTRUCTIONS:**

Answer Question one and any Other two questions.

**QUESTION ONE (30 MARKS)**

- a) Discuss the properties of the profit function. (4 marks)
- b) Distinguish between the following microeconomic concepts. (6 marks)
- Strategic and non-strategic games
  - Firm's supply function and firm's reaction function
  - Axiom of continuity and axiom of monotonicity
- c) Consider the following utility function and budget constraint

$$U = X_1^{1/2} X_2^{1/2} \quad M = P_1 X_1 + P_2 X_2$$

Required;

- Derive the Hicksian demand function for good 1 and 2 (5 marks)
- Derive the expenditure function. (2 marks)
- Using Shepherd's Lemma obtain the demand functions in i. above. (3 marks)

**QUESTION TWO (20 MARKS)**

- a) Discuss the properties of production functions. (6 marks)
- b) Suppose a firm's production and cost function is given as

$$Q = AK^\alpha L^\beta \quad C = rK + wL$$

- Derive the cost function of the firm. (10 marks)
- Using Shepherd's Lemma derive the conditional factor demand functions. (4 marks)

**QUESTION THREE (20 MARKS)**

- a) Using relevant examples distinguish between strong and weak axioms of revealed preferences. (8 marks)
- b) Using diagrams discuss how presence of externalities limit the operations of the market. (8 marks)
- c) Distinguish between short run equilibrium and long run equilibrium in perfectly competitive markets. (4 marks)

**QUESTION FOUR (20 MARKS)**

- a) Using a relevant diagram discuss the substitution effect and income effect of a normal good. (8 marks)
- b) Firms in a duopoly market intend to adopt a marketing strategy. It is assumed that the price is exogenous, market demand is fixed (Total quantity sold is the same regardless of the level of advertising). In addition, each firm chooses between two factors: customer (A) and Low (B). The game is presented as per the matrix below.

		Firm 2	
		A	B
Firm 1	A	900,900	240,960
	B	960, 240	300,300

- i. Show the strictly dominant and strictly dominated strategies for each firm. (6 marks)
- ii. Define and derive Nash equilibrium of this game. (6 marks)

**QUESTION FIVE (20 MARKS)**

- a) Distinguish between compensating variation and equivalent variation. (8 marks)
- b) Consider the following demand function and cost functions of firm A and B in Yale market.

$$Q = 400 - 4P \qquad TC_A = 10Q_A \qquad TC_B = 5Q_B^2$$

Suppose firm A is the quantity leader, determine

- i. The response functions for the two firms. (4 marks)
- ii. The equilibrium output, price and profit of the two firms. (8 marks)