



MACHAKOS UNIVERSITY

University Examinations for 2018/2019 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF ECONOMICS

FOURTH YEAR SUPPLEMENTARY EXAMINATION FOR
BACHELOR OF ECONOMICS

EET 400: MICROECONOMIC THEORY IV

DATE: 25/7/2019

TIME: 2:00 – 4:00 PM

INSTRUCTIONS:

- (i) Answer question one (Compulsory) and any other two questions
- (ii) Do not write on the question paper
- (iii) Show your workings clearly

QUESTION ONE (COMPULSORY)(30 MARKS)

- a) Farmers produce wheat from land and labour. The labour cost in Kenya Shillings to produce y tons of wheat is $c(y) = y^2$. There are 100 identical farms which all behave competitively.

Required

- i) What is the individual farmer's supply curve? (3 marks)
- ii) What is the market supply of wheat? (2 marks)
- iii) Suppose the demand curve is $D(p) = 220 - 45p$. What is the equilibrium price and quantity sold? (5 marks)
- iv) What is the equilibrium rent on land? (2 marks)
- b) Two duopoly firms face market demand $P = 40 - Q$, Q = total market output. Assume the firms have zero marginal cost. Suppose the firms must announce their outputs simultaneously, what will be the levels of output and profit for each firm? (8 marks)
- c) Explain five sources of market failure (10 marks)

QUESTION TWO (20 MARKS)

- a) A monopolist firm maximizes profits given by the function; $\text{Max}_y p(y)y - cy$. Using the standard comparative static, show and explain the sign and size of the change in price p due to a change in the cost c under the following circumstances.
- i) When the firm faces a linear demand function; $p(y) = a - by$ (8 marks)
 - ii) When the firm faces a constant elasticity demand function; $y = Ap^{-b}$ (6 marks)
- b) Explain the main types of oligopolistic competition models (6 marks)

QUESTION THREE (20 MARKS)

- a) Consider the following game as a solution to the public goods problem in the case of a discrete public good with two agents. Each agent i states a 'bid', b_i if $b_1 + b_2 \geq c$, the good is provided and each agent pays their bid amount; otherwise, the good is not provided and neither agent pays anything. Is the efficient outcome an equilibrium to this game? Is anything else an equilibrium? (6 marks)
- b) Explain the conditions for pareto optimality using the Edgeworth box diagram (8 marks)
- c) Derive the condition for efficiency in provision of the continuous Public Good. (6 marks)

QUESTION FOUR (20 MARKS)

Essence and Eau-Oh are two firms selling bottled natural spring water. The market demand for bottled water is given by $P = a - Q$, where P is price, Q output and $a > 0$. The marginal cost of producing a bottle of water is zero. However, each firm has to incur fixed costs of F to be in the business.

- i) How much will each firm produce if the firms set their quantity simultaneously? (8 marks)
- ii) Suppose now that Essence moves first. Eau-Oh observes Essence's choice of output and then sets its own. Determine the output of each firm. (12 marks)

QUESTION FIVE (20 MARKS)

- a) What is a mixed strategy nash equilibrium (2 marks)
- b) Compute the mixed strategy nash equilibrium for the following game

Player 1	Player 2		
		H	T
	H	3,3	1,1
	T	1,1	2,2

(6 marks)

- c) With the help of relevant economic methodologies, explain any four solution mechanisms to the externalities problem. (12 marks)