



MACHAKOS UNIVERSITY

University Examinations for 2016/2017 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF ECONOMICS

FOURTH YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF ECONOMICS

BACHELOR OF ECONOMICS & FINANCE

EET 400: MICROECONOMIC THEORY IV

DATE: 1/8/2017

TIME: 8:30 – 10:30 AM

INSTRUCTIONS:

Answer Question ONE and any other TWO questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Kenya consumers have a demand function for suitcases which has the form $D(P)=90-P$. Suitcases are supplied by Chinese firms and Indian firms. For simplicity, assume that there is a single representative firm in each country that behaves competitively. The cost function for producing Suitcases is given by $c(y) = y^2/2$ in each country. What is the equilibrium price and quality sold? (5 marks)
- b) Monopolist firms have the market power to choose not only the quantity and price of their output, but also the quality of their products. Considering a representative consumer with a quasi-linear utility function and a profit maximizing monopolist, show how the monopolist choice of quantity and quality of its product affects the social welfare. (10 marks)

- c) Softa and Coke companies are each simultaneously deciding whether to engage in heavy advertising campaign to increase a consumer's demand for their product. The game has the following payoff matrix, where the first payoff in each entry is for Softa and second is for coke.

		Coke	
		Advertise	Do not advertise
Pepsi	Advertise	4,4	5,6
	Do not advertise	5,8	3,2

- i) Does Softa have dominant strategy? If so, specify the dominant strategy. (3 marks)
- ii) Solve for the Nash equilibrium/equilibrium of the game. (3 marks)
- iii) Suppose now the game is played sequentially, with Spfta moving first. Represent the game in normal/matrix form. (4 marks)
- d) Describe the main characteristics of an oligopolistic market structure. (5 marks)

QUESTION TWO (20 MARKS)

- a) Consider a cournot industry in which the firm's outputs are denoted by $y_1, \dots, y_n$, aggregate output is denoted by $Y = \sum_{i=1}^n y_i$, the industry demand curve is denoted by $P(Y)$, and the cost function of each firm is given by $C_i(y_i) = cy_i$. For simplicity, assume that $P''(Y) < 0$. Suppose that each firm is required to pay a specific tax of t . Show that the industry output only depends on the sum of tax rate, $\sum_{i=1}^n t_i$. (10 marks)
- b) Explain the following terms,
- Nash equilibrium (2 marks)
 - Bertrand paradox (2 marks)
 - Reaction function (2 marks)
- c) "All Walrasian equilibrium are pareto-efficient; all pareto efficient equilibria can be sustained as walrasian equilibria." True or False? Briefly explain. (4 marks)

QUESTION THREE (20 MARKS)

Consider two firms facing market demand $100 - 2Y_1$ and their costs is given by $C_1(y_1) = 10 + 3y_1^2$ and $C_2(y_2) = 2y_2^2$

- a) What is the competitive equilibrium level of industry output.? (5 marks)
- b) If each firm behaves as a cournot competitor, what is firm 1's optimal choice given firm 2's output. (3 marks)
- c) Calculate the cournot equilibrium amount of output for each firm. (3 marks)
- d) Calculate the cartel amount of output for the industry. (4 marks)
- e) If firm 1 behaves as a follower and firm 2 behaves as a leader, calculate the stackelberger equilibrium output of each of firm. (5 marks)

QUESTION FOUR (20 MARKS)

- a) Given a competitive market with m identical firms each with cost function $C_i(y_i) = 2y_i^2 + 4$ and five consumers each with demand function $x_i(p) = 20 - \frac{1}{2}p$
 - i. Determine the market equilibrium price and output level. (5 marks)
 - ii. Compute and explain the effect of increase in the number of firms in the market on the Market price. (5 marks)
- b) Suppose two firms operate conditions of identical constant marginal cost c. The market demand is given by $Q = 300 - 15p$. Assume the firms play a cournot game then determine the output and profit of each firm. (10 marks)

QUESTION FIVE (20 MARKS)

- a) Explain the term externalities and briefly explains the solutions to negative externalities. (3 marks)
- b) Define and explain the term public good giving examples. (2 marks)
- c) Assume two agents with endowments for private goods W_i which they can use to contribute g_i for the provision of a public good G . If the public good is discrete with marginal cost equal to c , show that efficient provision of the good will take place if and only if $r_1 + r_2 > C$ where r_i is the reservation price for the public good. (6 marks)

- d) Explain the sources of market failure. (4 marks)
- e) Suppose that an economy consists of two persons 1 and 2, with two commodities x and y. Initial endowment are given as $x_1=20$, $y_1=4$, $x_2=6$ and $y_2=30$. determine the marginal rate of substitution for the two commodities by the two persons and explain if there is possibility of mutual beneficial exchange between the consumers. (5 marks)