



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2017/2018

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF
BACHELOR OF ECONOMICS, BACHELOR OF ECONOMICS AND STATISTICS,
BACHELOR OF ECONOMICS AND FINANCE AND BACHELOR OF ARTS
EET 400: MICROECONOMIC THEORY IV

DATE: Monday, 12th February 2018

TIME: 4.30 p.m. - 6.30 p.m.

INSTRUCTIONS:

Answer Question One (Compulsory) and any other TWO questions. Question ONE carries 30 marks and the rest carry 20 marks each.

QUESTION ONE

- a) Prove mathematically that the upward sloping part of the marginal cost curve above the average cost curve represents the supply curve. (6 marks)

- b) Given two firms with the following cost functions

$$c_1(y_1) = y_1^2$$

$$c_2(y_2) = 2y_2^2$$

Calculate the industry's supply. (5 marks)

- c) Safaricom and Airtel are competing in the introduction of a new product in the market. The payoffs are given in the table below

Safaricom	Airtel		
		Introduce	Don't Introduce
	Introduce	10, 5	2, 10
	Don't Introduce	8, 4	4, 2

By assigning a probabilities of x to Safaricom for introducing the product and y to Airtel for introducing the product, use mixed strategies approach to solve the problem. (8 marks)

- d) Assume that a public good can be provided in continuous amounts. The efficient provision of the continuous good can be got by maximization a weighted sum of utilities as $\text{Max } a_1 U_1(G, x_1) + a_2 U_2(G, x_2)$, Where $G = g_1 + g_2$ and $x_i = w_i - g_i$. Show that

$$MRS_{Gx}^1 + MRS_{Gx}^2 = 1. \quad (6 \text{ marks})$$

- e) Briefly discuss the characteristics of a competitive market. (5 marks)

QUESTION TWO

- a) Suppose a consumer decides to consume c_1 in the first period and to invest a fraction x of her wealth in the risky asset and a fraction $(1-x)$ in the certain asset. The consumer will have $((w_1 - c_1)x$ earning a return R_1 and $(w_1 - c_1)((1-x)$ earning a return R_0 .

i) What will be her second period wealth? (3 marks)

ii) Suppose the consumer has a utility function of the form

$U(c_1, c_2) = U(c_1) + \alpha EU(c_2)$ where $\alpha < 1$ is a discount factor, show the conditions for utility maximization. (7 marks)

- b) Assuming a monopolist with a cost function $c = c(x_m, q_m)$ and a representative consumer's utility function given as $U = V(x_m, q_m) + y$, where x_m and q_m are quantity and quality of the monopolist product respectively, while $V(x_m, q_m)$ and y are the consumer's utility of good x and left over income respectively. Compute and explain the effect of a change in quantity of a monopolist output on the social welfare (10 marks)

QUESTINO THREE

- a) Briefly discuss the theorems of welfare economics? (10 marks)
- b) Taking a quasi-linear utility function, show that a monopoly produces too little output relative to social optimum. (10 marks)

QUESTION FOUR

- a) Two firms facing a demand function of the form $Y = 15 - \frac{1}{3}P$ move simultaneously and compete in quantities. Assume that the firms face a marginal cost of KSh.15. Determine y_i and π_i . (10 marks)
- b) Suppose the firms in (a) above now move sequentially and compete in quantities what will be y_i and π_i ? (10 marks)

QUESTION FIVE

- a) Assume two individuals (1 and 2) and fixed amounts of two goods x and y . Pareto efficiency requires that one maximizes the welfare of one individual while holding the welfare of other fixed. Prove that $MU_1 = MU_2$. (10 marks)
- b) Assume two firms 1 and 2. Firm 1 produces x output which it sells in a competitive market. However, the production of x by firm 1 imposes a cost, $e(x)$ on firm 2.
- i) Express the profits of the two firms (3 marks)
- ii) What is the condition for equilibrium output? (2 marks)
- iii) Is the equilibrium output in (ii) efficient? If not what should be the condition for efficient equilibrium output? (5 marks)