KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2017/2018

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF MASTER OF SCIENCE IN AGRICULTURE

KBT 800: MICROECONOMICS FOR AGRICULTURE

DATE: Monday, 29th January 2018 **TIME: 2.00p.m -5.00p.m**

INSTRUCTIONS:

Answer **Question 1** and **any** other **2** questions

Question 1

(a) A consumer is willing to trade 1 kg of steak for 3 kgs of pork. He is currently purchasing as much steak as pork per month. The price of steak is twice that of pork. Should he reduce or increase consumption of steak? Explain. [5 Marks]

(b) A production technology is given as $Q = {}_{Y}KL$ where Q is the output in tons per day, K and L denote the daily requirements for capital and labour, respectively. Derive the equation for the isoquant when the daily output is 10 tons and $_Y$ is 2. [5 Marks]

(c) If the government imposed an effective price ceiling on a normal good, explain what is likely to happen to equilibrium price, quantity and welfare? [5 Marks]

(d) Explain why consumers have diminishing marginal rate of substitution and how it is reflected in the indifference curve. [5 Marks]

(e) If price of labour (L)=sh. 10 and MP_L=2, price of capital (K)=sh. 5 and MP_K=2. What should the producer do in order to minimize production costs? [5 Marks]

(f) Explain why marginal revenue is negative where the demand curve is inelastic. [5 Marks]

Question 2

Consider the following production function $y = 2K^{½}L^{½}$

(a) Derive the function for the marginal rate of technical substitution. [6 Marks]

(b) Does the function exhibit diminishing MRTS? Verify your answer. [3 Marks]

(c) Find the functions for the total, average, and marginal physical product of capital. [6 Marks]

Question 3

(a) Using the production function $y=15K^{1/2}L^{1/2}$, let the wage rate (w) equal sh.1, the rental rate for capital (r) equal sh.4, K=10 units in the short run. Derive the firm's short run supply function.

(b) What is the relationship between the elasticity coefficients and marginal revenue? [5 Marks]

Question 4

Suppose there are 100 identical firms in a perfectly competitive industry. Each firm has a short run total cost function $C=\frac{1}{300}q^3+0.2q^2+4q+10$

(a) Suppose market demand is given by q = -200p + 8000. What will be the equilibrium price-quantity combination? [10 Marks]

(b) Briefly explain why increased economies to scale experienced by firms in an industry is likely to result in the supply of the good shifting to the right. [5 Marks]