

JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

BACHELOR OF BUSINESS ADMINISTRATION WITH IT

YEAR 1 SEMESTER 2 EXAMINATION

AEC 201 – INTERMEDIATE MICROECONOMICS (EVERNING)

MAY/AUGUST 2014

Time: 2 Hours

Instruction

Answer Question ONE and ANY OTHER TWO Questions in the separate answer sheet provided

QUESTION ONE (COMPULSORY)

- (a) Explain the property of convexity to the origin of an indifferent curve (3mks)
- (b) Distinguish between “the law of variable proportion” and “the law of return to scale”.(2mks)
- (c) The cost function of a competitive firm is given by;

$$C = wL + rK$$

Where w and r are prices of labour (L) and capital (K) respectively. The firm produces output

$$Q = f(K, L)$$

Show that the marginal rate of technical substitution, $MRTS = \frac{w}{r}$ (5mks)

(d)The major objective of any firm is to achieve Pareto efficiency in resource allocation. An economy is said to be Pareto efficient when it must be impossible to increase the production of another, or to increase the consumption of one household without reducing the consumption of another. Briefly discuss the three conditions that must be fulfilled in order for a will enable any firm achieve Pareto efficiency. (6mks)

(e)In a perfect competitive market, a firm’s total revenue and total cost function are given as follows;

$$TR = rQ^2 - sQ$$

$$TC = r - sQ$$

Where; r and s are constants

Q is the output

TR and TC, the total revenue and total cost respectively.

On the basis of the given functions above, determine;

I The output quantity at the firm's equilibrium (3mks)

II The total break-even output level (3mks)

(f) Distinguish between a pure monopoly market and monopolistic market. (8mks)

QUESTION TWO

(a) Using indifferent curve analysis demonstrate how a household's equilibrium point is attained. (5mks)

(b) By focusing on an inferior good, use the indifference curve analysis to demonstrate and explain the income and substitution effects. (10mks)

(c) The consumer utility function of a rational consumer who wants to purchase a combination of two commodities X and Y is given by $U = f(X, Y)$. However, his income, I is limited and therefore subjecting him to a budget constraint governed by the equation, $XP_X + YP_Y = I$, where, P_X and P_Y are prices of commodities X and Y respectively. Show that the marginal rate of technical substitution, MRS is given by $\frac{P_X}{P_T}$ (5mks)

QUESTION THREE

(a) Define the following costs;

I Marginal Cost (1mk)

II Average Cost (1mk)

III Opportunity Cost (1mk)

(b) Why is the average cost curve usually U- shaped. (3mks)

(c) A major distributor of racquetball is thriving. One of the distributor's major problem is keeping up with the demand for racquetballs. Balls are purchased periodically from a sporting goods manufacturer. The annual cost of purchasing, owning and maintaining the inventory of racquetballs is described by the function;

$$C = \frac{288000}{q} + 0.15q + 2000000$$

Where q = The order size (in dozens of racquetballs)

c = The annual inventory cost

(i) Determine the order size q which minimizes annual inventory cost. (4mks)

(ii) The minimum annual inventory cost expected. (2mks)

(d) Suppose that the long-run total cost function for the typical mushroom producer is given by

$$TC = wq^2 - 10q + 100$$

Where;

q is the output of the typical firm

w represents the hourly wage rate of mushroom pickers.

Suppose the demand for mushrooms is

$$Q = -1000P + 40,000$$

Where;

Q is total quantity demanded

P is the market price.

Required

(i) If the wage rate is Sh. 1, what will be the long run equilibrium output for the typical mushroom picker? (4mks)

(ii) Assuming that the mushroom industry exhibits constant costs and that all firms are identical, what will be the long run equilibrium price of mushrooms, and how many mushroom firms will there be? (4mks)

QUESTION FOUR

(a) Explain and illustrate the resultant hypothetical total and marginal product curves in an economy with only two factors of production, one of which is fixed. (8mks)

(b) A firm is a monopolist which sells in two distinct markets, one of which is completely sealed off from the other. As part of your analysis, you establish that the demand for the firm's output in the two markets is given by;

$$Q_1 = 42 - 0.2P_1$$

$$Q_2 = 100 - 0.8P_2$$

The total cost of production is given by $C = 50 + 40Q$, where C = total cost producing a unit of the output quantities.

Required

Determine;

- (i) Price elasticity of demand for market 1 at the profit maximizing point. (4mk)
- (ii) Discriminated price for each market at the profit maximizing point. (4mks)
- (iii) Combined maximized profit in the two markets. (4mks)

QUESTION FIVE

The Kenya Power Supplies Company Ltd is the role of electricity in Kenya. This commodity is purchased by two separate consumers, namely (i) commercial users and (ii) domestic users, to whom the company is able to charge different prices or tariffs. Assuming that the major goal of the company is to maximize profits:

- (a) How should the company allocate its total output of electricity between the two groups of consumers? (12mks)
- (b) Which group is likely to be charged a higher price? Explain clearly the reasons for your answer. (4mks)
- (c) What conditions make it possible for the company to charge different prices for the same product? (4mks)