



**AFRICA
UNIVERSITY**

(A United Methodist-Related Institution)

“Investing in Africa’s Future”

**FACULTY OF MANAGEMENT AND
ADMINISTRATION**

COURSE TITLE: MEC 201- INTERMEDIATE MICROECONOMICS

SEMESTER 1: FINAL EXAMINATION NOVEMBER 2013

LECTURER: MR. L. NGENDAKUMANA

TIME: 3 HOURS

INSTRUCTIONS

Answer **all** questions in section A and any two questions in section B.
Total possible mark is **60**.

Start **each** question on a new page in your answer booklet.

The marks allocated to **each** question are shown at the end of the section.

Show all your workings.

Credit will be awarded for logical, systematic and neat presentations.

SECTION A

Question 1

- (i) Consider a Cobb-Douglas production function that shows a production of mosquito blankets in Malawi:

$$Q = 2K^{0.5} L^{0.5}$$

Where Q is output, K is capital input and L is labour input.

- a. Find the Marginal Product of labour and the Marginal Product of capital functions

[2]

- b. Assuming that the capital stock is fixed at 16 units (i.e. $K=16$), if the price of output (P) is \$ 6 per unit, and the wage rate (w) is \$ 2 per unit, determine the optimal or profit maximizing rate of labour to be hired. What labour rate is optimal if the wage rate increases to \$ 3 per unit? [2]
- c. For this production system above, are returns to scale decreasing, constant or increasing ? Explain [1]
- d. Explain and illustrate the concept of “**Returns to scale**”. Your explanations should be applied to both the general production and the Cobb Douglas production functions. [3]

(ii) Mutare Mart has kept the following data on labor input and production of pillow cases for each of the eight production periods.

Production period:	1	2	3	4	5	6	7	8	9
Labor input:	4	7	5	2	1	8	9	3	6
Output (Total Product)	14	57	22	5	2	64	63	9	40

- a. Use the data on labor input and total product to compute the average and marginal product of labor input rates from one to eight. (Assume that a zero labor input would result in zero output.) [2]
- b. Use the results in (a) to describe the three stages of production and how they relate to the concept of diminishing marginal returns. You should use total product of labor, marginal and average product of labor graphs in your explanations. [3]

Question 2

a. Using a well labeled diagram and making all necessary assumptions, show and explain the substitution and income effects from an increase in a good's price.

[4]

b. Suppose that the consumer has a demand function for lacto of the form:

$$x = 40 + \frac{m}{20p_x}$$

Originally his income is \$960 per week, and the price of lacto is \$3 per quart.

Calculate the income and the substitution effects assuming that the price of lacto increases to \$4 per quart.

[2]

c. Suppose the government charges a 20 % ad valorem tax on lacto. Assess how this policy would affect the consumer's consumption level at the new price level.

[2]

d. State and explain the "Slutsky identity" and show how it relates to the income and substitution effects.

[2]

e. Distinguish between the offer and demand curves using well labeled graphs in your explanations.

[2]

Question 3

Consider the market demand for cell phones which is given by the equation $P = 300 - Q_T$, where Q_T is the total amount of cell phones produced by all of the suppliers in the market. The marginal cost is constant and equal to \$ 30.

a. Assuming there is a single firm that supplies cell phones in the market, what will be the levels of output and price that maximize profit?

[2]

b. Consider a perfectly competitive market that supplies the cell phones; find the levels of output and price that maximize profit.

[2]

c. Now consider a market that has two sellers (i.e. a duopoly) that supply cell phones, what are the output and price levels that lead to the profit maximization?

[2]

d. Distinguish between a perfectly competitive and monopoly markets using their most salient characteristics and owing to their respective pricing mechanisms.

[3]

e. Monopoly production is undesirable. Illustrate this statement

[2]

SECTION B

Question 4

Tinaye has a monthly income of 2 000 m dollars to spend on two commodities X and Y. The prices per unit of X and Y are \$2 and \$4 respectively. The utility he enjoys by consuming X and Y units is given by:

$$U = x^{1/2} y^{1/2}.$$

a. Find the optimal values of x and y as well as the Lagrangean multiplier that solve the maximization problem.

[4]

- b. Explain how a 50 % increase in the prices of the 2 commodities and the same increase in Tinaye's income will affect his initial consumption levels.

[2]

- c. Which theory can you use to predict the outcome in (b)? Briefly explain. [2]
 d. Using well labeled diagrams outline and explain the various factors that affect the budget constraint [4]

Question 5

(i) Using an equation of a commodity X market demand and initial values of income, price of the commodity and the price of commodity Y related to X, determine:

- a. What quantity of commodity X will be demanded at the initial prices and income? [1]
 b. The effect of a decrease in price of the commodity X on the total revenue? [1]
 c. The probable impact of a reduction in the price of the commodity Y on the quantity demanded of commodity X [1]
 d. How the sale of commodity X would change during the period of rising income [1]
 e. Illustrate how you can use your knowledge of elasticity to foster profitability of a company which is under your management [4]

(ii) Demand for electricity in Swaziland is given by $Q = 50 - 0.25P$

- c. At what price and quantity will electricity be produced if the
 $TC = 4Q^2$ [Hint: The Swazi electricity is supplied by a regulated monopoly] [2]
 d. Use your results in (a) and your knowledge to explain the concept of economic profit [2]

Question 6

- a. Distinguish between the economies and diseconomies of scale. Use graphical tools to support your arguments [3]
 b. Explain the concept of "Minimum Efficient Scale" [2]
 c. Distinguish between factors creating economies of scale from those creating diseconomies of scale. [5]
 d. Distinguish between a perfectly competitive and monopoly markets using their most salient characteristics and owing to their respective pricing mechanisms. [4]
 e. Monopoly production is undesirable. Illustrate this statement [2]
 f.
 g. Choose the correct answer to the following assertion:
 The monopolistic firm's demand curve:
 a is less elastic than a purely competitive firm's demand curve
 b is perfectly elastic
 c coincides with its marginal revenue curve

d is perfectly inelastic

[2]

End of Paper