



**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

Consider a Cobb-Douglas production function that shows a production of textiles in Madagascar $Q = 100K^{0.5} L^{0.5}$

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

The following table shows the various input rates and the attained output(s)

<i>Rate of Capital input (K)</i>								
8	283	400	490	565	632	693	748	800
7	265	374	458	529	592	648	700	748
6	245	346	424	490	548	600	648	693
5	224	316	387	447	500	548	592	632
4	200	283	346	400	447	490	529	565
3	173	245	300	346	387	426	458	490
2	141	200	245	283	316	346	374	400
1	100	141	173	200	224	245	265	283
	1	2	3	4	5	6	7	8

Rate of labour input (L)
 Inferring from the above table:

- Suppose that the firm currently employs 1 unit of capital. The price of capital is \$ 4 per unit and the price of labor is \$10 per unit. What is the short- run total cost of producing 283 units of output? What is the long- run total cost of producing 283 units of output? [2]
- Suppose that the price of capital increases to \$ 20 per unit and the price of labor falls to \$4 per unit. Now what is the long- run total cost of producing 283 units of output? [1]
- For this production system above, are returns to scale decreasing, constant or increasing ? Explain [1]
- Explain and illustrate the concept of “Returns to scale”. Your explanations should be based on the Cobb Douglas production functions. [2]

(ii) After defining the concept of short- run production:

- 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]
- Derive any six key relationships among the total, marginal and average product functions. [Use diagrammatical tools as illustrations] [3]

Question 2

(i) a. Using a well labelled 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:

$$x = 40 + \frac{m}{10p_x}$$

Originally his income is \$960 per week, and the price of lacto is \$4 per quart.

Calculate the income and the substitution effects assuming that the price of lacto decreases to \$3 per quart. [2]

c. Suppose the government charges a 25 % 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. [1]

e. Distinguish between income offer and Engel curves using well labeled graphs in your explanations. [2]

Question 3

Spencer, a graduating senior decides to sell some of his tests to his three wealthy friends A, B, and C. He determines that their individual demand equations are as follows:

$$A: Q_A = 30 - P$$

$$B: Q_B = 22.50 - 0.75P$$

$$C: Q_C = 37.50 - 1.25P$$

a. What is the market equation for Spencer's tests? [1]

b. How many more tests can he sell for each one dollar decrease in price? [1]

c. If he has a file of 60 tests, what price should he charge to sell his entire collection [2]

d. How many tests will be bought by each individual? [3]

e. If the market supply equation for Spencer's test is given by $Q = 40 + 2P$, determine the equilibrium price and quantity [2]

f. compute the point elasticity of demand at $P = \$16$. Interpret your result [2]

g. If the objective is to increase total revenue, should the price be increased or decreased? Explain. [2]

SECTION B

Question 4

Tinaye has a monthly income of 2 000 dollars to spend on two commodities X and Y. The prices per unit of X and Y are \$4 and \$2 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

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

a. Write the marginal revenue equation and determine at what price and quantity the marginal revenue will be equal to zero? [2]

b. At what price and quantity will electricity be produced if the $TC = 4Q^2$ (Assuming that the Swazi electricity is supplied by a regulated monopoly) [2]

(iv) Can economic profit be determined from the information given? Why or why not? [2]

b. Distinguish between a perfectly competitive and monopoly markets using their most salient characteristics and owing to their respective pricing mechanisms. [4]

c. Monopoly production is undesirable. Illustrate this statement [2]

Question 6

Consider a product for which demand is given by the equation $P = 450 - Q_T$, where Q_T is the total amount produced by all of the suppliers in the market. The marginal and average costs are constant and equal to \$ 30.

a. Assuming there is a single firm in the market, what will be the levels of output and price that maximize profit? [2]

b. Consider a perfectly competitive market; find the levels of output and price that maximize profit. [2]

c. Now consider a market that has two sellers- a duopoly, what is the output and price levels that lead to the profit maximization? [3]

d. Given the answers in (a) and (b), is the following statement:

“Economic theory predicts that price is higher, and the rate of output lower for a monopoly than for perfectly competitive market”, true or false? Explain [3]

e. 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