



"Investing in Africa's Future"

FACULTY OF MANAGEMENT AND ADMINISTRATION

COURSE CODE AND TITLE: MEC 201-Intermediate Microeconomics

END OF FIRST SEMESTER EXAMINATIONS

NOVEMBER 2016

LECTURER: Mr L. NGENDAKUMANA

DURATION: 3 HOURS

INSTRUCTIONS

Answer all questions in section A and any two questions in section B

Total possible mark is 100

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

- Explain the concept of market failure and provide all the causes of market failures. [10]
- Outline and provide solid reasons on why there is need for government intervention when a country is faced with market failure [10]

Question 2

(i) After explaining 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 capital, marginal and average product of capital graphs in your explanations. [4]
- Derive any six key relationships among the total, marginal and average product of capital. [Use appropriate diagrammatical tools in your illustrations] [4]
- "Firms operate in the short run but make their decisions in the long run." Do you agree or disagree with this assertion? Explain [4]

(ii) Consider a Cobb-Douglas production function that shows a production of textiles in Madagascar $Q = F(K, L)$

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)

Rate of
Capital input
(K)

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 price of capital is \$ 75 per unit and the price of labor is \$18 per unit, compute all possible total cost of producing 283 units of output. [2]

- b. Suppose that the price of capital increases to \$ 95 per unit and the price of labor falls to \$14 per unit, answer question (a). [2]
- c. Explain and illustrate the concept of "Returns to scale", with reference to the Cobb- Douglas production function and use a clear demonstration on how to verify types of returns to scale can be derived. [4]

Question 3

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? [4]
- b. The effect of a decrease in price of the commodity X on the total revenue? [4]
- c. The probable impact of a reduction in the price of the commodity Y on the quantity demanded of commodity X [4]
- d. How the sale of commodity X would change during the period of rising income [4]
- e. Use a numerical example to show how the concept of elasticity can be used to classify commodities as being normal or inferior. [4]

SECTION B

Question 4

- (i) a. Explain the substitution and income effects from an increase or decrease in a normal good's price perspectives [6]
- b. Suppose the government charges a 25 % ad valorem tax on the commodity you have chosen in (a). Assess how this policy would affect the consumer's consumption level at the new price level. [4]
- c. State and explain the "Slutsky identity " and show how it relates to the income and substitution effects [Use algebraic tools in your illustration] [4]
- d. Distinguish between the price offer and demand curves using well labeled graphs in your explanations. [2]
- e. Explain the concept of budget constraint and provide the various factors that can affect such budget constraint [4]

Question 5

a. Suppose that a firm has the production function $Q = 20K^{\frac{1}{2}}L^{\frac{1}{2}}$. Currently, the firm is using 144 units of capital and 225 units of labour. Given the very specialized nature of capital equipment, it takes nine to twelve months to increase the capital stock, but the rate of labour input can be varied daily. If the price of labour is \$ 12 per unit and the price of output is \$5 per unit:

- (i) Is the firm operating efficiently in the short-run? [3]
- (ii) If not explain why and determine the optimal rate of input [3]

- b. Using algebraic tool, demonstrate and explain the condition for optimal employment of two factor inputs with reference to long- run production function involving the capital and labour inputs. [4]
- c. You need to hire workers for a project you are directing. You may add one unit of capital at a time in a manner that will allow you to measure the added contribution of that unit of capital. At what point will you stop hiring capital? Relate this process to the three stages of the production function [5]
- d. Use algebraic techniques to explain the concept of "nature and objective of the firm". [5]

Question 6

- a. Distinguish between a perfectly competitive and monopoly markets using their most salient characteristics and owing to their respective pricing mechanisms. [6]
- b. "If a natural monopolist operates where price equals marginal cost, then it will produce an efficient level of output, but it will be unable to cover its costs." Assess this statement using a well labeled diagram in your arguments [4]
- c. "Economic theory predicts that price is higher, and the rate of output lower for a monopoly than for perfectly competitive market", true or false? Use a numerical example in your explanations [6]
- d. Use theories on regulated monopoly, its pricing mechanism and numerical examples to explain the concept of economic profit [4]

End of paper