



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

MAIN EXAMINATION

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JANUARY – APRIL 2018 TRIMESTER

FACULTY OF ARTS AND SOCIAL SCIENCES

DEPARTMENT OF SOCIAL SCIENCES

REGULAR PROGRAMME

ECN 304: INTERMEDIATE MICROECONOMICS

Date: APRIL 2018	Duration: 2 Hours
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INSTRUCTIONS: Answer Question ONE and any other TWO Questions
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- Q1. a) Differentiate between Marshallian Cardinal utility theory from Hicksian, Slutsky's Ordinal utility theory. **(5 Marks)**
- b) With the use of well-labeled diagram show price change effect decomposition by both Hicks and Slutsky. Use separate diagrams for your answer. **(4 Marks)**
- c) Mary consumes just two goods (1 and 2). Her budget line has intercepts of 20 for q1 and 40 for q2, and $p_2 = \$10$. **(8 Marks)**
- What is p_1 ?
 - What is Mary's income (m)?
 - What will be Mary's willingness to exchange good 2 for good 1 in equilibrium (i.e., her MRS)?
- d) If Mary faces a utility function of the form:
$$U = f(x, y) = X^{1/2} Y^{1/2}$$
Show Mary's Utility maximizing condition and calculate her $MRS_{x,y}$? **(6 Marks)**
- e) Must a consumer purchase a positive quantity of each commodity to be in equilibrium? Explain. **(5 Marks)**
- f) Use an IC-BL diagram to show how the following changes will affect a consumer's purchase of sukuma wiki. **(6 Marks)**

- i) An increase in the price of sukuma wiki.
- ii) An increase in consumer income.
- iii) New health information indicating that sukuma wiki consumption is good for you.

Q2. Distinguish a Leontief Production function from a Cobb-Douglas Production function.

- a) Clearly demonstrate their different Isoquants **(5 Marks)**
- b) Show that the marginal rate of technical substitution are different in the two functions. **(5 Marks)**
- c) Given an original production function represented by the following equation:

$$Q = 10 K^{1/2} L^{1/2} \quad \textbf{(10 Marks)}$$

Derive version of the original production function given above for the following technical progress in production:

- i) Neutral Technical progress
- ii) Capital – Saving Technical Progress
- iii) Labour – Saving Technical Progress.

Q3. Suppose a given consumer consumes two goods; Good X (Bread) and Good Y (Chicken). Suppose further that her weekly income is 50/-, price of good X is 2/-, and price of good Y is 10/-. The table below gives total utilities he derives consuming different levels of each good.

Qx	TUx	QY	TUy
1	30	1	50
2	39	2	105
3	45	3	148
4	50	4	178
5	54	5	198
6	56	6	213

- a) Calculate the marginal utility for each level of consumption per good **(5 Marks)**
- b) Calculate the marginal utility per shilling spent on each good for the different quantities. **(5 Marks)**
- c) What will be the consumer's utility maximizing bundle of the two goods? **(10Marks)**

Q4. a) If the production function of cars by the General Motors is given by the following equation:

$$Q = K^{1/2} L^{1/2}$$

Calculate its:

(8 Marks)

- i) Average Product of Labour (APL)
- ii) Average Product of Capital (APK)
- iii) Marginal Product of Labour (MPL)
- iv) Marginal Product of Capital (MPK)

b) If the Maize production function is given as below:

$$Q = 4K^{1/2} L^{1/2}$$

i) What is the equation of the isoquant for $Q = 20$? **(5 Marks)**

ii) What is the marginal rate of technical substitution ($MRTS_{L,K}$) between labour and capital in the production of maize? **(7 Marks)**

Q5. Consider a monopoly facing the inverse demand $p(y) = 40 - y$, and with total cost $TC(y) = 20y$.

a) Find the marginal revenue of a monopoly, $MR(y)$ and depict it in a graph together with the demand (formula +graph). Which is bigger: price or marginal revenue? Why? (one sentence) **(6 Marks)**

b) Find the optimal level of production and price (two numbers). Illustrate the optimal choice in a graph, depicting Consumer and Producer Surplus, and DWL (three numbers +graph). **(7 Marks)**

c) Find equilibrium price and quantity. **(7 Marks)**

END