

LAIKIPIA



UNIVERSITY

UNIVERSITY EXAMINATIONS

1ST SEMESTER 2023/2024 ACADEMIC YEAR

**SECOND YEAR EXAMINATION FOR THE DEGREE
OF BACHELOR OF SCIENCE IN ECONOMICS &
STATISTICS, BACHELOR OF ECONOMICS &
SOCIOLOGY, BACHELOR OF AGRIBUSINESS
MANAGEMENT AND BACHELOR OF COMMERCE**

**BCOM -211/ECON 211/ECON 212: INTERMEDIATE
MICROECONOMICS**

STREAM: *ECON STAT/SOCI/BCOM/AGBM*

TIME: *2 HRS*

DAY: *FRIDAY [8.30-10.30 A.M]*

DATE: *15/12/2023*

THIS QUESTION PAPER CONSISTS OF FIVE (5) PAGES

PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.



INSTRUCTIONS: ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS

QUESTION ONE

- a) Define and differentiate the following terms
- i) Indifference curves and isoquants (2 Marks)
 - ii) Marginal rate of substitution and marginal rate of technical substitution (2 Marks)
 - iii) Ordinal utility and cardinal utility (2 Marks)
 - iv) Normal good and inferior goods (2 Marks)
 - v) Principal of diminishing marginal utility and principal of diminishing marginal returns (2 Marks)
- b) Consider an individual who receives utility (U) from the consumption of two goods X and Y . The price of X is equal to P_x while the price of Y is P_y . The individual's income is equal to M and he uses it to spend on the two goods.
- i) Formulate the consumer utility maximization problem (2 Marks)
 - ii) Using the Langragian approach, determine conditions for the utility maximizing choice (4 Marks)
 - iii) Now, suppose this individual's income is equal to Ksh.100 and the price of good X is Ksh.5 and the price of good Y is Ksh.5. Compute the utility maximizing choice of X and Y using the demand functions obtained in (ii) above. (4 Marks)
- c) The airline industry has two types of consumers, the economy class and the business class who generally have quite different willingness to pay. The business class passengers pay substantially more for their tickets, but they receive an enhanced level of service while the economy class pay less and receive a lower level of service. Assume that the demand function for the economy class whose maximum price is relatively low and whose elasticity of demand is relatively high is given as $X_d^e = 225 - 50P_x$ and the business class passengers whose price is relatively high and elasticity of demand is relatively low is $X_d^b = 105 - 10P_x$. Assume further that the marginal cost for both passengers is $USD 0.5$ per passenger.
- i) Construct an expression for the aggregate market demand for the air tickets (2 Marks)
 - ii) Determine the optimal price charged for each group of passengers (4 Marks)
 - iii) Calculate the profit maximizing price for this airline. (4 Marks)



QUESTION TWO

- a) Explain, using examples three axioms of consumers' preferences (4 Marks)
- b) Using microeconomic tools of analysis prove that the slope of indifference curve is the ratio of marginal utilities of the good. (6 marks)
- c) What are homothetic preferences? Illustrate and explain why perfect substitute's utility functions are examples of homothetic preferences. (4 marks)
- d) Given that the individual's demand function for good X is $X = M/2P_1$. Assume that initially the price of X is $P_x = 20$; and the consumer's money income is $M = 200$. Suppose the price of X falls to $P_x = 15$. Calculate the Slutsky substitution effect and income effect (6 marks)

QUESTION THREE

- a) In the case of convex consumer preferences any point that satisfies the tangency condition must be an optimal point", is this statement true or false? Explain using relevant diagrams (5 Marks)
- b) Explain, using examples the weak axiom of revealed preference and the strong axiom of revealed preference (4 Marks)
- c) A firm has the following production function and the cost constraint $Q = 50K^{2/5}L^{3/5}$,

$$4K + 8L = 400$$

Required

- i) What are the prices of capital and labor inputs (4 Marks)
- ii) Set up a constrained output maximization problem from the information given and solve for the optimal points (4 Marks)
- iii) Show that when output is maximized, $MPK / MPL = P_K / P_L$ (3 Marks)

QUESTION FOUR

- a) Critically comment on the following statements:
- i) In the short-run, a firm operating under a competitive market must make supernormal profits to remain operational in an industry (2 Marks)



- ii) Consumer will gain more if compensated so as to attain previous level of utility than when compensated to attain a previous bundle of consumption (2 Marks)
- b) Consider a monopoly facing the inverse demand $p(y) = 40 - y$, and with total cost $TC(y) = 20y$.
- i) Find the marginal revenue of the monopoly, $MR(y)$ and depict it in a graph together with the demand. Which is bigger: price or marginal revenue and why? (4 Marks)
- ii) Find the optimal level of production and price. (3 marks)
- iii) Illustrate the optimal choice in a graph, depicting consumer and producer surplus and Deadweight loss (DWL). (2 Marks)
- iv) Find equilibrium Markup (2 Marks)
- v) First Degree Price Discrimination: Find Total surplus, consumer, producer surplus and DWL if monopoly can perfectly discriminate among buyers and quantities. (5 Marks)

QUESTION FIVE

- a) Is it possible to have a Pareto efficient allocation where someone is worse off than he is at an allocation that is not Pareto efficient? Explain (4 Marks)
- b) Consider an economy with apples and oranges. James's endowment of two commodities is given by $W^D = (8,2)$ and Kate's endowment is $W^K = (2,8)$. The utility functions of James and Kate are the same and given by $U^i(x_1^i, x_2^i) = 5 \ln x_1^i + 5 \ln x_2^i$

Where $i = D, K$

- i) Plot the Edgeworth box and mark the point corresponding to the initial endowments. (4 Marks)
- ii) Give a general definition of Pareto efficient allocation x and state its equivalent condition in terms of MRS (one sentence, you do not need to prove the equivalence) (3 Marks)



iii) Using the 'MRS' condition verify that the initial endowments are not Pareto efficient
(4 Marks)

iv) Using MRS condition verify that the competitive allocation is Pareto efficient
(5 Marks)

