The Management University of Africa

Sponsored by the Kenya Institute of Management

UNDERGRADUATE UNIVERSITY EXAMINATIONS

SCHOOL OF MANAGEMENT AND LEADERSHIP

DEGREE OF BACHELOR OF COMMERCE/ BACHELOR OF MANAGEMENT AND LEADERSHIP/BACHELOR OF DEVELOPMENT STUDIES

BML 200/ BCM 215: **MICRO ECONOMICS/ INTERMEDIATE MICROECONOMICS**

DATE: **5TH AUGUST 2024**

DURATION: 2 HOURS

MAXIMUM MARKS: 70

INSTRUCTIONS:

1. Write your registration number on the answer booklet.
2. **DO NOT** write on this question paper.
3. This paper contains **SIX (6)** questions.
4. Question **ONE** is compulsory.
5. Answer any other **THREE** questions.
6. Question **ONE** carries **25 MARKS** and the rest carry **15 MARKS** each.
7. **Write all your answers in the Examination answer booklet provided**

QUESTION ONE

Read the Case Study below carefully and answer the questions that follow:

The McNight Company is a major producer of steel. Management estimates that the demand for the company's steel is given by the equation

Qs = 6,000 -500 Ps + 0.1 I + 100 Pa Where Qs is steel demand is thousands of tons per year, Ps is the price of steel, I is income per capita, and Pa is the price of aluminum. Initially, the price of steel is 20, income is 30,000 and the price of aluminum is 18. The Total cost function of steel is TC= $4Q^2 - 6Q + 3{,}500$

i. How much steel will be demanded at the initial prices and income. **(2 Marks)**

ii. Determine the income elasticity when income changes to 35,000. **(4 Marks)**

iii. Giving a reason propose what type of good steel is. **(1 Mark)**

iv. Determine the cross elasticity between steel and aluminum if the price of aluminum increase by 3. **(4 Marks)**

v. Identify the relationship between steel and aluminum and explain. **(1 Mark)**

vi. Determine the profit maximizing level of output. **(5 Marks)**

vii. Explain four factors that can impact the demand of McNight company steel. **(8 Marks)**

QUESTION TWO

a) Suppose a consumer has a utility function given by $U(x,y)=6X^2Y$, where x is the quantity of good X consumed and y is the quantity of good Y consumed.

i. Derive the consumer's marginal utility for each good. **(2 Marks)**

ii. If the price of X is \$4 and the price of Y is \$3, and the consumer has an income of \$30, determine the consumer's utility-maximizing quantities of X and Y. **(5 Marks)**

b) Consider two goods, X and Y. If the price of good X increases by 10%, and as a result, the quantity demanded of good Y decreases by 15%, calculate the cross-price elasticity of demand between goods X and Y. Interpret the sign and magnitude of the cross-price elasticity. **(3 Marks)**

c) Assess five reasons why firms in competitive market structures advertise. **(5 Marks)**

QUESTION THREE

i. Consider an oligopoly market with two firms, A and B. Their cost functions are:

- Cost function for firm A: $CA=20Q_A + Q_A^2$
- Cost function for firm B: $CB=30Q_B + 2Q_B^2$

The market demand function is $Q=160-P$, where Q is the total quantity and P is the market price.

a) Calculate the marginal cost functions for both firms. **(1 Mark)**

b) Determine the Cournot equilibrium quantity produced by each firm. **(7 Marks)**

c) Find the market price. **(1 Mark)**

ii. Consider the market for bicycles. If the government imposes a price ceiling below the equilibrium price for bicycles, describe the potential consequences on the market. **(6 Marks)**

QUESTION FOUR

a) Consider a firm with the production function $Q=4L^{0.3}K^{0.7}$, where Q is the quantity of output, L is the quantity of labor, and K is the quantity of capital.

i. If the firm employs 16 units of labor ($L=16$) and 9 units of capital ($K=9$), calculate the total output (Q). **(2 Marks)**

ii. Determine the marginal product of labor (MPL) when the firm employs 16 units of labor and 9 units of capital. **(3 Marks)**

iii. Calculate the average product of capital (APK) when the firm employs 16 units of labor and 9 units of capital. **(2 Marks)**

b) Graph and analyze the impact of an increase in the price of raw materials used in the production of automobiles on the equilibrium price and quantity in the market for automobiles. **(6 Marks)**

c) Explain two business applications for the law of diminishing marginal utility. **(2 Marks)**

QUESTION FIVE

a) Using diagrams illustrate and explain the typical shapes of the short-run average total cost (ATC), average variable cost (AVC), and marginal cost (MC) curves. **(8 Marks)**

b) A monopolist has the following demand function and total cost function.

Demand function: $Q=100-2P$

Total cost function: $TC=10Q+5Q^2$

i. Calculate the marginal revenue function. **(2 Marks)**

ii. Find the profit-maximizing level of output and the corresponding price. **(3 Marks)**

iii. Calculate the monopolist's profit. **(2 Marks)**

QUESTION SIX

a) Discuss limitations of a command economy and a market economy addressed by a mixed economy. **(8 Marks)**

b) A firm has a total cost function given by $TC=50L+10K$, where L is the quantity of labor and K is the quantity of capital. The firm's production function is $Q=5L^{0.5}K^{0.5}$.

i. If the firm's goal is to produce 100 units of output, determine the combinations of labor and capital that the firm could use. **(5 Marks)**

ii. Calculate the minimum cost of producing 100 units of output. **(2 Marks)**