MACHAKOS UNIVERSITY

University Examinations 2021/2022 Academic Year

SCHOOL OF BUSINESS, ECONOMICS AND HOSPITALITY AND TOURISM MANAGEMENT

DEPARTMENT OF ECONOMICS

FIRST YEAR FIRST SEMESTER EXAMINATION FOR

MASTER OF SCIENCE IN AGRICULTURAL ECONOMICS AND DEVELOPEMENT

AED 801: AGRICULTURAL MICROECONOMICS

DATE: 23/8/2022 **TIME: 9.00-12.00 PM**

INSTRUCTIONS
Answer Question ONE and any other THREE questions

QUESTION ONE (24 MARKS)

a) Mary intends to open a grocery in a commercial centre. Briefly explain six factors that she should consider to attract customers to her salon. (6 marks)

b) In a certain market the demand for maize was 200 bags daily at a price of KShs 2,000 per bag during the first quarter of the year. The market demand reduced to 180 bags daily when the price increased to KShs 3,500 per bag during the last quarter of the year. Calculate the arc price elasticity of demand for the maize and interpret the results. (4 marks)

c) The following payoff matrix indicates profits obtained in hundreds of dollars by two firms by selling their respective products in the same market

		Firm 2		
		Product A	Product B	Product C
Firm 1	Product X	18, 36	42, 6	60, 24
	Product Y	30, 16	70, 48	44, 32
	Product Z	36, 47	36, 12	50, 34

Determine the Nash equilibrium for both firms. (3 marks)

d) Beca Shoes Company ltd sells same type of shoes at different prices in different locations. Explain four conditions that have might have enabled the company to practice this price discrimination (4 marks)

e) An electronic company manufactures a certain type of gadget under the following conditions:

- Total fixed cost of production is $8,000 per unit
- Variable cost per unit is $10.00
- The price per copy is $50

Assuming a linear cost and revenue functions determine the following:

i) The number of gadgets that should be produced and sold in order to break-even (4 marks)

ii) The level of output required for the company to achieve its profit objective of $10,000 (2 marks)

QUESTION TWO (12 MARKS)

Mrs. Mwako visited Nairobi City Market and observed that the market for tomatoes appeared to be perfectly competitive.

a) State four characteristics of this perfectly competitive market (4 marks)

b) Explain and illustrate with the help of diagrams the short run and long run equilibrium for this market. (4 marks)

c) State 2 advantages and 2 disadvantages of this kind of market structure (4 marks)

QUESTION THREE (12 MARKS)

a) Mark intends to start a car wash business in Nairobi. He has identified an open ground for which he is being charged a monthly rental fee of KShs 30,000 and KShs 100 per car. He will be charging KShs 500 for every car regardless of the model. By letting q to be the number of cars that are washed every month on average:

i. Formulate Mark's monthly revenue, cost and profit functions (3 marks)

ii. Find his break-even point (2 marks)

iii. Calculate his total profit if 800 cars are washed in a month. (2 marks)

b) A certain giant supermarket with several branches in the country has been running at loss due to mismanagement. A new managing director has been recruited to turn around the supermarket. Explain briefly five effective cost management strategies that the new MD can adopt. (5 marks)

QUESTION FOUR (12 MARKS)

Suppose a firm uses labor in the production of its output. The table below gives the number of workers hired (L) and the total products (TP) of the corresponding labor units.

TPL	0	6	16	24	30	34	34	32	26
L	0	2	4	6	8	10	12	14	16

a) Determine average product of labour (APL) and marginal product of labour (MPL) for the corresponding levels of labour used. (6 marks)

b) Draw on the same graph TPL, APL and MPL curves (3 marks)

c) Use your graph to explain the law of diminishing marginal returns (3 marks)

QUESTION FIVE (12 MARKS)

a) A firm's production function is given by

$$Q = 8L^2 + 2K^2$$

where L and K are labour and capital respectively. The per unit costs of labour and capital are $ 2 and $ 1 respectively. The firm has a daily production budget of $ 60. Determine the number of units of L and K that the firm should employ in order to maximize its output Q (4 marks)

b) The following table shows hypothetical figures for the total utility derived by an individual from consuming varying amounts of three goods, A, B and C. The prices of A, B and C are respectively, £5.00, £3.00 and £2.00

No. of units Consumed	Total Utility TUA	Total Utility TUB	Total Utility TUC
2	144	120	128
4	240	208	240
6	320	272	320
8	390	320	376
10	450	360	408
12	490	376	432
14	520	384	448

Calculate the marginal utilities for each commodity, and use them to determine the utility maximizing combination of goods A, B and C. (8 marks)