ZIMBABWE EZEKIEL GUTI UNIVERSITY

FACULTY OF LAW, BUSINESS INTELLIGENCE AND ECONOMICS

DEPARTMENT OF ECONOMICS, MARKETING AND ENTREPRENEURSHIP

EXAMINATION PAPER

COURSE CODE	:	CEC 414
COURSE TITLE	:	MANAGERIAL ECONOMICS
DURATION	:	3 Hours
LEVEL	:	4.1

29 JUL 2024

INSTRUCTIONS TO CANDIDATES:

1. No cell phones are allowed in the examination venue.
2. Use of silent, non-programmable calculators is allowed
3. Answer question number **one (1)** in Section A (Compulsory) and any other **three (3)** questions in Section B.
4. Begin each question on a new page.
5. The number of marks for each question or part question is shown in brackets [ ]
6. Show all workings, where applicable.

SECTION A

Question 1: Market Demand for Pharmaceuticals

Many people perceive the demand for prescription drugs and other pharmaceutical products to be perfectly inelastic. After all, a patient needing an expensive cardiovascular drug might die in the absence of treatment. Moreover, in many instances the cost of medication is paid by an insurance company and not by the patient. These two factors do tend to make the demand for many pharmaceutical products relatively inelastic. However, since surgery and life-style changes are substitutes for many life-saving drugs, economic theory predicts that the demand for such products is unlikely to be perfectly inelastic.

The accompanying statistics summarize results from two recent studies that confirm this prediction: The demand for pharmaceutical products is inelastic, but not perfectly so. For instance, the own price elasticity of demand for anti-ulcer drugs is 0.7, while the own price elasticity of demand for cardiovascular drugs is slightly more inelastic at 0.4. Consequently, a 10 percent increase in the price of anti-ulcer drugs reduces their use by 7 percent. A 10 percent increase in the price of cardiovascular drugs results in only a 4 percent reduction in quantity demanded. The own price elasticities of demand reported here are based on the industry demand for each type of drug. The demand for particular brands within each industry is even more responsive to price changes. Managers often use such information to maximise profit and revenue.

a. Explain the motivation for corporate managers not to specifically aim at revenue maximisation in place of profit maximisation. [6 marks]

b. Determine the priori expectation of cross-price elasticity between the following pairs of products to be positive, negative, or zero? Justify your answer

   i. Life-style changes and surgery

   ii. Medication and a surgery

   iii. Cardiovascular drug and treatment. [9 marks]

c. Comment on the relevance of the given statistics in revenue maximisation strategies. [10 marks]

SECTION B

Question 2

Tongaat Hulett, a sugar manufacturing company in Zimbabwe approached a Managerial Economist for an advice on the market outlook. The Economist presented the following estimated demand for sugar (Q):

$$Q = 7\,200 - 0.05P + 2PX + 4.2I + 0.20A$$

St Err	*(2.002)*	*(0.01)*	*(0.89)*	*(2.50)*	*(0.70)*
t-cal	*(3 596.40)*	*(-5.00)*	*(2.25)*	*(2.02)*	*(0.29)*

$R^2 = 0.78$ $\quad Adj\ R^2 = 0.77$ $\quad n = 254$ $\quad F = 20.88$

a) What proportion of the variation in sales is explained by the independent variables in the equations? How confident are you about this answer? [5 marks]

b) Given the definition of variables used in the model are given as follows:

P (in cents): Price of the 2kg sugar

PX (in cents): Price of leading competitor's product

I (in dollars) : Per capita income of Zimbabweans

A (in dollars) : Monthly advertising expenditure

i. Discuss the relative impact that each variable has on the demand. [8 marks]

ii. Given the following demand conditions and any other illustration applicable, consider whether sugar is a normal good or otherwise. [12 marks]

P (in cents): Price of 2 kg sugar = 200

PX (in cents): Price of leading competitor's product = 220

I (in dollars) : Per capita income of Bindura's residents= 340

A (in dollars) : Monthly advertising expenditure = 10 000

Question 3

a. The Economist for Quest Motors in Mutare has calculated a production function for the manufacture of their medium-size buses as follows:

$$Q = 1.3K^{0.3}L^{0.75}$$

where Q is number of buses produced per week, K is the daily usage of capital investment and L is number of labor hours per day.

i. Does the equation exhibit increasing, constant, or decreasing returns to scale? Why? [3 marks]

ii. How many buses will be produced per week with the following amounts of labor and capital? [10 marks]

Capital	Labour
50	100
60	120
75	150
100	200
150	300

b. You were recently hired to replace the manager of the Slicer Division at a major crispy-manufacturing firm, despite the manager's strong external sales record. Crispy-manufacturing is relatively simple, requiring only labor and a machine that cuts and crimps potatoes. As you begin reviewing the company's production information, you learn that labor is paid \$8 per hour and the last worker hired produced 100 packs per hour. The company rents crispy cutters and crimping machines for \$16 per hour, and the marginal product of capital is 100 packs per hour. Discuss what you think the previous manager could have done to keep his job? Show evidence.

[12 marks]

Question 4

You are the manager of College Computers, a manufacturer of customized computers that meet the specifications required by the local university. Over 90 percent of your clientele consists of college students. College Computers is not the only firm that builds computers to meet this university's specifications; indeed, it competes with many manufacturers online and through

traditional retail outlets. To attract its large student clientele, College Computers runs a weekly ad in the student paper advertising its "free service after the sale" policy in an attempt to differentiate itself from the competition. The weekly demand for computers produced by College Computers is given by

$$Q = 1\,000 - P$$

and its weekly cost of producing computers is

$$C = 2\,000 + Q^2$$

a) If other firms in the industry sell PCs at \$630, what price and quantity of computers should you produce to maximize your firm's profits? [12 marks]

b) Assess long run adjustments you should anticipate. Justify your answer. [13 marks]

Question 5

The worker-management negotiation results may be modelled as a game with imperfect information. The two may resolve to sit on a negotiating table with an aim to get a win-win position though strict personal interests may not be declared outright. The results of the game are presented in Table 5.1 below:

Players' Payoff Matrix		**Management**	
		Strategy A	*Strategy B*
Worker	*Strategy A*	-300;-300	1 000;500
	Strategy B	500;1 000	-200;-200

a. What do you think is the key element that can make games perfect? Give one reason [2 marks]

b. Why is it important to be the one who set the agenda whenever a meeting will result in bargaining of some sort? [4 marks]

c. Determine and present the equilibrium, if any, of the game results given in Table 5.1above. [7 marks]

d. Show whether the worker or the management have dominant strategies? [7 marks]

e. Is there a Nash equilibrium in this game? Explain/ Prove. [5 marks]

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