

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

**GRADUATE SCHOOL OF BUSINESS
EXECUTIVE MASTER OF BUSINESS ADMINISTRATION DEGREE
MANAGERIAL ECONOMICS EMB 500
STAGE 1**

FINAL EXAMINATION: 21 OCTOBER 2003

Time allowed 3 Hours and 30 minutes

Reading Time is 30 Minutes. Candidates are permitted to make notes on the question paper but not to write in the answer book during this period.

INSTRUCTIONS

1. Answer Question One and three other questions
 2. The answer for each question should start on a fresh page.
 3. Marks allocated for each question are shown in brackets.
 4. Candidates are advised to bring electronic non-programmable calculators
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Question One

Prospects Millennium Investments (PMI) is a firm located in Belmont industrial sites in Bulawayo. PMI produces and sells toys for babies and toddlers, and the firm enjoyed considerable boom in the past few years as the post independence war years in Zimbabwe saw an increase in the number of babies born, the trend continued until the late 1980s. Sales nationwide edged past Z\$4million mark last year and this year the Chief Executive of PMI, Mr Vusa Dube has set aside Z\$1million for advertising, up from Z\$750 000,00 last year. The firm sells a variety of products, but it is a sufficient approximation to think in terms of an average product with an average price of Z\$16 and marginal cost constant at Z\$8 per average unit. The firm's overheads are Z\$800 00,00 per annum excluding advertising.

Market research has culminated in the following estimate of the firm's sales-advertising function:

$$Q = 110,386.3 + 298.674A - 0.10537A^2$$

Where Q represents the sales units of the average product and A represents thousands of dollars spent on advertising.

- (a) Calculate the expected sales volume and total profit given an advertising budget of Z\$1million
- (b) Calculate the profit maximizing level of advertising expenditure.
- (c) At that level what would sales volume, revenue, and profit be?

- (d) What reasons can you think of for supporting the chief executive's decision to spend Z\$1 million on advertising? (25 marks)

Question Two

The National Railways of Zimbabwe has filed a petition with the Ministry of Transport and Energy requesting permission to lower its freight charges for a particular route from Z\$1186.00 to Z\$511.00 per ton. The company's objective is to be able to meet competition from Road Motor Services (RMS) who is involved in hauling by truck and barge. The NRZ has substantial costs that cannot be clearly allocated for specific routes. Fully distributed costs for the route in question are Z\$756.00 per ton, but incremental costs are only Z\$469. Because the truck-barge operation has few fixed costs, its fully distributed and incremental costs are nearly equal, about Z\$519.00 per ton.

The NRZ argues that a rate of Z\$511,00 should be allowed because the Z\$469.00 incremental costs would be covered. The competing truck-barge company contends that the proposed rail rates are unfair because they are less than the Z\$759.00 per ton that represented the firm's fully distributed costs and reject the railroad's proposal for rate reduction. For many years, such decisions by the Ministry of Transport and Energy have made it difficult for NRZ to compete with other modes of transportation. But since the early 1990s, railroad-shipping rates should have been deregulated, giving the NRZ more latitude in price setting.

Discuss this scenario using your theoretical understanding of market structures. Do you think the NRZ has a valid case in this matter? Comment on the decision by the Ministry and discuss why you think it was or was not appropriate. How best do you think this matter could be resolved? (25 marks)

Question Three

(a) A new farmer who has just been resettled has decided to go into ranching and plans to sell hides and beef. Hides and beef are assumed to be jointly produced in fixed proportions. The marginal cost equation for the beef-hide product package is given by:

$$MC = 30 + 5Q$$

The demand and marginal revenue equations for the two products are:

BEEF	HIDES
$P = 60 - 1Q$	$P = 80 - 2Q$
$MR = 60 - 2Q$	$MR = 80 - 4Q$

- (1) What prices should be charged for the beef and hides?
(2) How many units of the product package should be produced? (12 marks)

(b) XYZ General motors sells Fort Escort cars which are British manufactured, small to

medium size cars and has decided to reduce excess end-of-the model (2001) year Inventories by a 2.5% discount off the average list price of Ford Escorts sold during the month of September. Customer response was quite enthusiastic and unit sales rose by 10% over the previous month's sales level.

- (1) Calculate the point elasticity of demand for Ford Escorts.
- (2) Calculate the profit-maximizing price per Ford Escort if the company's wholesale price is US\$9 000.00 and incurs marginal selling costs of US\$375.00.
- (3) Do you think the company benefited from the discount awarded? Why or why not? (13 marks)

Question Four

Critically analyze the validity and applicability of the neoclassical and managerial discretion models of firm to the Zimbabwean business environment. With valid reasons, justify which model you would recommend for your organization and why? (25 marks)

Question Five

- (a) A firm has three factories each of which produces the same item. Let x , y and z denote the respective numbers of units that are produced at the three factories in order to cover for 2000 units. Hence, $x + y + z = 2000$. The cost functions for the three factories are:

$$C_1(x) = 200 + \frac{1}{100}x^2, \quad C_2(y) = 200 + y + \frac{1}{300}y^3, \quad C_3(z) = 200 + 10z$$

The total cost of covering the order is thus,

$$C = C_1(x) + C_2(y) + C_3(z)$$

Find the values of x , y and z that maximize C . (Hint: Reduce the problem to one with only two variables by solving for z) (9 marks)

- (b) With use of clearly labeled diagram(s), explain how a technically efficient firm attains equilibrium in production. (9 marks)

- (c) How is the concept of "production equilibrium" important in managerial decision-making? (7 marks)

Good Luck!