

EASTERN UNIVERSITY, SRILANKA  
Faculty of Commerce and Management

Final Year First Semester Examination in Business Administration / Commerce  
2007/08 (October 2008, Proper/ Repeat)  
(Specialization in Human Resources Management/ Marketing Management/  
Enterprise development)



**DBE 4123: Managerial Economics**

Answer all questions

Time: Three Hours

1. (i) Determine the partial derivatives with respect to all of the variables in the following function

(a)  $TC=50+5Q_1+10Q_2+5Q_1Q_2$

(b)  $Q=1.5L^{0.5}K^{0.5}$

(C)  $Q_A=2.5P_A^{-1.30}Y^{0.2}P_B^{0.4}$

(06 Marks)

- (ii) Explain how the first and second derivatives of a function are used to find the maximum or minimum points of a function  $Y = f(x)$

(08Marks)

- (iii) Show the differentiation rules of the following functions

- (a) Constant function  
(b) Product of two function  
(c) Quotient of two function

(06 Marks)

(Total 20 Marks)

2. (i) What is forecasting? Why is it so important in the management of business firms and other enterprises?

(02Marks)

- (ii) Single Equation Model of the Demand for Cereal (Good X)

$$Q_X = \beta_0 + \beta_1 P_X + \beta_2 Y + \beta_3 N + \beta_4 PS + \beta_5 PC + e$$

QX = Quality of X  
PX = Price of Good X  
Y = Consumer Income  
N = Size of Population  
PS = Price of Muffins  
PC = Price of Milk

Interpret all the variables in the econometric model

(06 Marks)

- (iii) The following information of Elasticities of demand for electricity for residential use in the U.S given as

<u>Variable</u>	<u>Elasticity</u>
Price	-0.974
Per-capita income	0.714
Price of gas	0.159
Number of customers	1.000

Interpret the variable with regards to the electricity consumption in the U.S

(04 Marks)

- (iv). Briefly explain the following time trends

- (a) Secular Trend
- (b) Cyclical Functions
- (c) Seasonal Variation
- (d) Irregular or Random Influences

(08Marks)

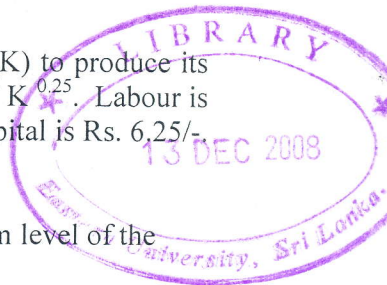
**(Total 20 Marks)**

3. (i). A firm making sofas has the following income data for one week

Sales (50 sofas at \$ 1000)		\$50,000
Less cost of goods sold:		
Variable manufacturing costs	\$20,000	
Fixed manufacturing costs	\$5,000	\$25,000
		<hr/>
Gross margin		\$25,000
Less selling and administrative expenses:		
Variable	\$ 10,000	
Fixed	\$5,000	\$15,000
		<hr/>
Net income		\$ 10,000

- (a) Find the firm's breakeven quantity. (08 Marks)
- (b) Find the firm's new breakeven output if it builds a new plant that will raise fixed manufacturing costs to \$10,000 but decrease variable manufacturing cost to \$300 per unit. Assume average selling expenses, fixed selling expenses, and selling price remain the same. (12 Marks)

**(Total 20 Marks)**



4. Suppose a that a firm uses inputs of labour (L) and capital (K) to produce its output ( Q) according to the production function  $Q = 10 L^{0.25} K^{0.25}$ . Labour is paid an hourly wage rate of Rs.25/- and the rental price of capital is Rs. 6.25/-. The firm decides to sell its output at the price of Rs. 10.

- i. Using appropriate Lagrange method, find the optimum level of the labor and capital  
(08 Marks)
- ii. Calculate the profit level at this stage  
(04 Marks)
- ii. Suppose due to inflation the price of output increases by Rs.1, calculate the new profit level  
(05 Marks)
- iii. How does this price change make effect on labour and capital level?  
(03 Marks)

**(Total 20 Marks)**

5. Consider the following information for a production unit

Objective function

$$\pi = 24 G_1 + 8 G_2$$

Constraint function

$$2 G_1 + 5 G_2 \leq 40$$

$$4 G_1 + G_2 \leq 20$$

$$10 G_1 + 5 G_2 \leq 60$$

- i. Graph the inequality constraints  
(05 Marks)
- ii. Using graphical method, find the level of  $G_1$  and  $G_2$ , and interpret your answer  
(09 Marks)
- iii. Obtain the profit level  
(06 Marks)

**(Total 20 Marks)**

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