AFRICA UNIVERSITY
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"Investing in Africa's Future"

FACULTY OF MANAGEMENT AND ADMINISTRATION

MEC 502 MANAGERIAL ECONOMICS EXAM 1

END OF FIRST SEMESTER EXAMINATIONS

NOVEMBER/DECEMBER 2016

LECTURER: MR G. MANDEWO

DURATION: 3 HRS

INSTRUCTIONS

Answer **Question number one** and any other **Three** questions

Total possible mark is **100.**

Start **each** question on a new page in your answer Booklet.

Question 1

(a) In the context of schematic building blocks of managerial economics emphasis has been placed on decision sciences. What is the relevance of decision sciences in managerial economics? **(5 marks)**

(b) We desire to ensure optimal solutions to managerial economics. Explain using a concrete example what you understand by the term optimal? **(5 marks)**

(c) Explain how regression analysis can be used in the estimation of a demand function. **(5 marks)**

(d) Suppose the class representative is engaged by Spar Zimbabwe to determine the demand for dry groceries in Mutare. The following data is available for her estimation

	Mon	Tues	Wed	Thur	Fri	Sat	Sun
Quantity	15	12	11	11	9	8	6
Price	1	3	4	5	5	7	8

i. What is your *apriori* expectation on the relationship between price and quantity demanded? **(2 marks)**
ii. Estimate the demand function, interpret it and fit the regression equation in the scatter diagram **(3 marks)**
iii. Show how the estimated demand function can be used to make forecast. **(2 marks)**
iv. Compute the coefficient of determination and interpret it. **(3 marks)**

You may refer to the following formulae

$$\hat{\beta} = \frac{\sum xy}{\sum x^2}$$

where $x = X - \overline{X}$ and $y = Y - \overline{Y}$

$$\hat{\alpha} = \overline{Y} - \hat{\beta}\overline{X}$$

$$R^2 = \hat{\beta}^2 \frac{\sum x^2}{\sum y^2}$$

(e) In what way would multiple linear regression model deviate from a simple linear regression model in the estimation of a demand function? **(5 marks)**

(f) Given that Total Revenues is a product of price and quantity, determine the value of marginal revenues that shows a direct relationship between price elasticity of demand and marginal revenues. **(5 marks)**

(g) Using the finding in item (a) investigate the effect of reducing prices for the following cases (you may enhance your answer using diagrams

i. The elasticity of demand for bio carbonate soda for use in preparing Okra is unitary (e_p= -1)

ii. The elasticity of demand for imported perfumes is elastic (e_p= -8.9)

iii. The elasticity of demand for cooking oil is inelastic (e_p= -1) **(5 marks)**

(h) A firm's Total cost function is given by the following equation

$$TC = 5Q^3 - 500Q^2 + 720Q + 15000$$

Using two distinct methods, determine the rate of output where the Average Variable cost is at its minimum. **(5 marks)**

Question 2

a. Profit contribution analysis helps managers to make business decisions. Explain in detail using concrete examples. **[4]**
b. There is an interrelationship between Total Product (TP), Marginal Product (MP) and Average Product (AP). In what way may a manager use this knowledge to grow a company? **[5]**
c. Total Cost (TC), Total Fixed Cost (TFC) and Total Variable cost(TVC) are inextricably interrelated. Demonstrate. **[4]**
d. Demonstrate two methods you would use to determine the optimal labour input and optimal capital input given a Cobb Douglas production function of the form

$Q = 12L^{0.5}K^{\frac{1}{2}}$ And that the wage rate is \$16 per hour and the price of the machine is \$4 per hour and the total cost of inputs is \$120.00 **[5]**

Question 3

(a) Transfer pricing depends on whether there is an external market or not for an intermediate good. Comment. **[5]**

(b) A firm has found a way of using first-degree price discrimination. Demand for its product is given by

$P = 20 - 2Q$

The marginal cost is constant and equal to $6.00

With first degree price discrimination what will be the profit maximizing rate of output? **[5]**

(c) How would you price Soya cake and cooking oil (Jointly produced goods)? **[5]**

(d) What is meant by the statement 'the assignment of common costs must, by definition, be arbitrary'? **[5]**

Question 4

(a) Demonstrate the difference between profit-maximizing decision for a monopolist and that of perfect competition. **[5]**

(b) In the long run a firm in perfect competition will not earn economic profit. Explain. **[5]**

(c) For a perfectly competitive firm, the market price is $16.00, the total cost equation is

$$TC = Q^3/3 + 5Q^2 + 40Q$$

Determine the profit maximizing rate of output and the level of profit. **[5]**

(d) Illustrate and explain why monopoly production is undesirable. **[5]**

Question 5

(a) Under what conditions might a maxmin strategy be a rational criterion for a manager to use in decision making? **[5]**

(b) Consider two bus operators on the Hre-Mtre route, how could the prisoners' Dilemma model be used to explain the outcome of the price war between the two operators? **[5]**

(c) Sometimes the strategy adopted by a manager would depend upon the number of times the game is going to be played and also who is initiating the game first. Explain this statement in detail. **[5]**

(d)Two firms can either reduce their prices or keep them at the present level.. If firm A cuts prices it will earn $10.00 in profit and it is the same for B if it also cuts prices. Firm A will earn $20.00 if firm B does not cut prices. However, if firm A makes no price change, it will earn nothing if firm B reduces prices and $5.00 if firm B makes no price change. The outcomes for B are the same as for firm A.

(a) Develop a payoff matrix for this game? **[5]**
(b) Does the game have Nash equilibrium? **[5]**
(c) Does either firm have a dominant strategy? Explain. **[5]**

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