

**UNIVERSITY OF SWAZILAND**

**FINAL EXAMINATION**

**DECEMBER 2012**

**TITLE OF PAPER: INTRODUCTION TO MICROECONOMICS**

**COURSE CODE: ECON 201**

**INSTRUCTIONS: ANSWER QUESTION 1 AND ONE OTHER QUESTION.**

**TIME ALLOWED : THREE (3) HOURS**

**TOTAL MARKS: 75**

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**Question 1 (Compulsory)**  
**(50 marks)**

a) With the aid of diagrams, compare and contrast the welfare effects of a Lump Sum tax and a Per Unit tax in regulating a Monopoly.  
[8 marks]

b) (i) Distinguish between the concepts of Value of Marginal Product (VMP<sub>L</sub>), Marginal Revenue Product (MRP<sub>L</sub>),  
[5 marks]

(ii) Distinguish between the concepts of Average Resource Cost (ARC<sub>L</sub>) and the Marginal Resource Cost (MRC<sub>L</sub>)  
[5 marks]

(iii) Promoted Automation Limited is the only purchaser of the labour resource in the manufacturing of fax machines and also operates as a single seller of fax machines in Swaziland. With the aid of diagrams, provide a detailed explanation of the kind of exploitation to which the labour resource is subjected in this industry.  
[12 marks]

(c) A Monopoly firm's demand function is given by:

$$Q = 500 - 50P$$

Where P and Q refer to price and quantity respectively

Assume that the **total cost** function is

$$C = 25 + 0.5Q$$

- (i) Calculate equilibrium price and quantity [7 marks]  
(ii) Calculate the level of profit [3 marks]

(d) Using models of your own choice, distinguish between pricing and output determination in an Oligopolistic industry characterized by perfect collusion and one that is characterized by imperfect collusion.  
[10 marks]

## Question 2

a) If the manufacturer of cut glass has a production function given by

$$Q = 15K^{0.3} L^{0.6}$$

find the marginal product of labour and capital. If the current levels of labour and capital are 12 and 30, respectively, determine the effect on output of an additional unit of labour.

[7 marks]

(b) **“The portion of the marginal cost curve for a perfectly competitive firm that lies above the minimum point of the short run average cost curve is the supply curve for the firm”** True or False? Discuss.

[8 marks]

c) Consider the following information for a profit maximising perfectly competitive firm:

$$P = MR = \text{E}100$$

$$TC = 2500 + 204Q - 3Q^2 + 0.02Q^3$$

Where P = price of product

MR = marginal revenue

TC = short run total cost

Q = Units of output produced per month

Determine the optimal level of output and calculate the level of profit.  
[10 marks]

## Question 3

(a) Demonstrate, algebraically, that when the average cost curve is falling, the marginal cost curve lies below the AC curve.

[8 marks]

(b) With the aid of diagrams, distinguish between the Law of Diminishing Returns and the Law of Returns to Scale.

[7 marks]

(c) The following is a utility function for individual H whose commodity bundle comprises  $X$  and  $Y$ .

$$U = X^{1/2} Y^{1/2}$$

s.t.  $I = P_x X + P_y Y$

Where  $I$  = income,  $P_x$  = price of  $X$ ,  $P_y$  = price of  $Y$   
Given  $P_x = E2$ ,  $P_y = E4$  and  $I = E100$

- (i) Find the utility maximizing levels of  $X$  and  $Y$  [8 marks]
- (ii) Determine the maximum level of utility [2 marks]

#### Question 4

Mathematically derive the relationship between elasticity of demand, price and marginal revenue. With the aid of diagrams, for a linear demand curve, detail the kind of advice you would offer to a producer regarding the pricing of a product with a highly elastic demand and a large number of substitutes. [25 marks]

#### Question 5

(a) With the aid of a diagram distinguish between a Marshallian/ Ordinary Demand Curve and a compensated demand curve.

[6 marks]

(b) With the aid of diagrams, use the concepts of income and substitution effects of a price change to explain the difference between the demand curve for a normal good and that of a giffen (i.e. a very inferior good)

[8 marks]

(b) Given the following demand functions of segmented markets:

$$Q_1 = 32 - 0.4P_1$$

$$Q_2 = 18 - 0.1P_2$$

Assume that the **total cost** function is

$$C = 50 + 40Q$$

Where  $Q = Q_1 + Q_2$

(i) Find profit maximizing levels of output and prices.

[6 marks]

(ii) Is it worthwhile for this firm to practice price discrimination?  
Show your workings. [5 marks]