UNIVERSITY OF SWAZILAND

DEPARTMENT OF ECONOMICS

SUPPLEMENTARY EXAMINATION 2007

TITLE OF PAPER: INTRODUCTION TO MICROECONOMICS

COURSE CODE: ECON 201

INSTRUCTIONS: 1.   ANSWER ANY <u>FOUR</u> QUESTIONS.

                              2.   ALL QUESTION CARRY 25 MARKS EACH.

TIME ALLOWED :   THREE (3) HOURS

THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS BEEN
GRANTED BY THE INVIGILATOR.

Question 1

Suppose you have 12 hours of study time in which to prepare for three exams. For each hour of study you can expect your mark to be as given in the accompanying table. Suppose you want to allocate your time to maximize your total numerical score on all three exams. (Each is weighted equally in your final result):

Hour	Exam A	MP$_A$	Exam B	MP$_B$	Exam C	MP$_C$
1	40		60		39	
2	65		90		46	
3	80		100		60	
4	90		100		72	
5	95		90		82	
6	99		75		90	
7	100		55		96	
8	100		33		100	
9	99		8		100	
10	95		0		100	

(a) Complete the table above with the marginal product (score) of each hour of study for each exam. (Show work)
[15 marks]

(b) State briefly the meaning of negative marginal product in this example. [3 marks]

(C)State a general rule for dividing your time to maximize the total score on all three exams. How many hours should be devoted to the preparation of exams A, B, and C. [show work]
[7 marks]

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Question 2

(a) The following table shows levels of output and associated marginal costs. Given that the firm's total fixed costs are E200. Complete the table with figures of Total Variable Costs (TVC), Total Costs (TC) Average Variable Costs (AVC) and Average Total Costs (ATC)(show work):

OUTPUT	MC (E)	TVC (E)	TC (E)	AVC (E)	ATC (E)
0	-				
1	60				
2	50				
3	60				
4	200				
5	300				

[8 marks]

(b) Show mathematically that in conventional cost theory, when the Average Cost (AC) is increasing, the marginal cost curve lies above the AC curve.

[10 marks]

(c) Distingush between the Law of Diminishing Returns and the Laws of Returns to Scale. [7 marks]

Question 3

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 4

(a)   With the aid of diagrams, compare and contrast two different models of price discrimination. What are the effects of Price

discrimination on society welfare?

    [10 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:

[10 marks]

(ii)   Suppose the firm could not practice price discrimination what would be the profit maximizing price and quantity levels?   [5 marks]

Question 5

a) Distinguish between profit maximization under conditions of monopolistic Competition and Oligopoly   [15 marks]

The demand function of a profit maximizing monopolist is

$$Q + 2P = 40$$

And his average cost function is

$$AC = 20 Q^{-1} + 4$$

At what output level will the firm maximize profit? [10 marks]

Question 6

(a) A firm's isoquant curve is given by

$$Q = L^{2/5} K^{3/5}$$
Where Q = level of output
L = labour input
K = capital input

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Assume $P_L = 2$, $P_K = 3$

Where P_L = price of labour

        P_K = price of capital

Utilizing the Lagrangian Method, calculate the minimum level of costs that is necessary to produce Q = 12.   [15 marks]

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

$P = MR = £60$

$TC = 4000 + 204Q - 3Q^2 + 0.02Q^3$

Where P = price of product

       MR = marginal revenue

       TC = short run total cost

       Q = Units of output produced per month

(i)   Determine the optimal level of output. [10 marks]

Question 7

a)   With the aid of diagrams describe how the employment and pricing of a resource is determined under the following scenarios; indicate clearly the type of exploitation the input is subjected to in each case:

      i) Inputs are sourced from a perfectly competitive industry but output is distributed by a monopoly firm.   [8 marks]

      ii)   Both input and output markets are imperfectly competitive [17 marks]

Question 8

The market demand function for a firm is given by
$$8P + Q - 64 = 0$$
and the firm's average cost function takes the form

$$AC = 8/Q + 6 - 0.4Q + 0.08Q^2$$

Determine the level of output Q, which

(i)   Maximises the firm's total revenue [8 marks]

(ii)   Maximises the firm's profits   [9 marks]

(iii)   Minimises the firm's marginal cost [8 marks]