NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF COMMERCE

DEPARTMENT OF BANKING

APPLIED ECONOMICS I   **CBA 4103**

SUPPLEMENTARY EXAMINATION   **AUGUST 2008**

TIME: 3 HOURS

INSTRUCTIONS TO CANDIDATES

This paper contains SIX (6) questions.

Answer any FOUR questions.

All Questions carry [25] Marks each.

Start the answer to each full question on a fresh page.

Indicate on your answer booklet whether you are in the conventional or parallel programme.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets [ ] at the end of each question or part question.

The businesses in this question paper are intended to be fictitious.

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This paper consists of 4 printed pages

QUESTION 1

The Prisoner's Dilemma in the game theory always leads to an outcome that is not only a Nash Equilibrium, but to an outcome that is also a Dominant Strategy Equilibrium.

    (i)   Demonstrate the difference between a Nash Equilibrium and a Dominant
             Strategy.   [8 marks]
    (ii)   Do all Dominant Strategies lead to Nash Equilibrium? Please Explain
                                                 [5 marks]
    (iii)   Show the pay-off of a game with more than one Nash Equilibrium and with no
             Nash Equilibrium.   [6 marks]
    (iv)   Why is it that Prisoner's Dilemma game is Pareto inefficient?   [4 marks]
    (v)   What may turn it to be Pareto efficient?   [2 marks]

          TOTAL   **[25 MARKS]**

QUESTION 2

With the aid of a relevant diagram, discuss whether it is possible for a firm to integrate the objectives of profit maximization and growth. What factors may militate against this endeavor?   [25 marks]

          TOTAL   **[25 MARKS]**

QUESTION 3

(a)   Assume total cost is given by

$$TC = 5\,000 + 1\,000Q - 500Q^2 + (2/3)Q^3 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{(i)}$$

        (i) Find the Marginal Cost function?   [3 marks]
        (ii) Find the Average Cost Function?   [3 marks]
        (iii) At what value of Q does marginal cost equal average revenue?   [5 marks]

(b)   Furthermore, assume that a monopolist demand curve is given by the following
        relationship:

$$P = 1000 - 0.5Q \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{(ii)}$$

        (i) Find the marginal revenue function   [3 marks]
        (ii) What is the relationship between the slopes of the average and marginal revenue
        curves?   [4 marks]
        (iii) At what price is marginal revenue zero?   [4 marks]

(iv) Why does a monopolist face a downward sloping demand curve?   [3 marks]

TOTAL   **[25 MARKS]**

QUESTION 4

The following relations describe the supply and demand of Maputi at the National University of Science and Technology:

Quantity demanded per week = 65 000 – 10P
Quantity supplied per week = -35 000 + 15P

(a)   What is the market-clearing price?   [2 marks]
(b)   Calculate the quantity demanded and supplied at equilibrium?   [2 marks]
(c)   Calculate the quantity demanded and supplied at prices of $5 000.00 and $3 000.00. At each price level comment whether there will be a surplus or shortage of maputi in the market?   [6 marks]
d)   If 1 000 more units of maputi are bought at each and every price, what will be the new equation for quantity demanded?   [3marks]
(e)   What are the new equilibrium price and quantity?   [4 marks]
(f)   What could lead to the effect described in (d) above?   [8 marks]

TOTAL   **[25 MARKS]**

QUESTION 5

(a)   Giving any appropriate economic example, explain the essence of Lagrangean Multiplier Method.   [4 marks]

(b)   Daffstone Inc. has determined through regression analyses that its sales (S) are a function of the amount of advertising (measured in units) in two different media. This is given by the following relationship (X = Newspaper; Y = Magazines):

$$S(X,Y) = 200X + 100Y - 10X^2 - 20Y^2 + 20XY$$

Assuming the following budget restriction on advertising:
$$X + Y = 20 \text{ units:}$$

    i. Determine (using the lagrangean multiplier techniques) the level of newspaper and magazines advertising that maximizes sales subject to the budget constraint.   [10 marks]
    ii. Calculate the firm's sales at this constraint optimum level   [3 marks]
    iii. Estimate the effect of increasing the budget to 25 units   [5 marks]
    iv. Give the economic interpretation for the value of the lagrangean multiplier λ obtained in (i)   [3 marks]

TOTAL   **[25 MARKS**]

QUESTION 6

(a) Assume that two companies (C and D), are duopolists that produce identical products. Demand for the products is given by the following linear demand function:

$$P = 600 - Q_C - Q_D$$

Where Q_C and Q_D are the quantities sold by the respective firms and P is the selling price

The total cost functions for the two companies are:

$$TC_C = 25\ 000 + 100Q_C$$
$$TC_D = 20\ 000 + 125Q_D$$

Assume that the firms act independently as in the Cournot's model (that is, each firm assumes that the other firm's output will not change)

    i. Determine the long-run equilibrium output and selling price for each firm
                                                                 [10 marks]
    ii. Determine the total profits for each firm at the equilibrium output found in part (ii)   [5 marks]

(b) Evaluate the statement that "It has been suggested that oligopolists are deterred from changing prices frequently because they are afraid of the reactions of their rivals and do not respond to minor changes in costs".

        TOTAL   **[25 MARKS**]