EASTERN UNIVERSITY, SRI LANKA
Faculty of Commerce and Management
Fourth Year First Semester Examination in Com.-2004/05 (march/April 200
ECN 4064: Managerial Economics

Answer all question   **Time: Three Hours**

1.

(a) If $P = 120-1.5Q$ is the equation for the demand curve, find the corresponding total revenue, marginal revenue and Average revenue functions.

(03 Marks)

(b) The statistics department of an appliance manufacturer has estimated that the demand function (Number purchased annually) to their (Brand X) automatic washer is as follows:

$$QX = 197,000 - 100PX + 50PY + 0.025M + 0.02A + 10,000PL$$

Where

   QX = quantity purchased
   PX = the price of the Company's washer
   PY = the price of a major competitor's washer
   M = the average household income
   A = the annual Rupees spent on advertising, and
   PL = cost of doing one load of wash in a self-service laundry.

   (i)   If PY = Rs.300 , M = 40000 , A = Rs. 200,000 and PL = 0.80, find the price elasticity of demand between PX = Rs.350 and PX = Rs. 400

(06 Marks)

   (ii)   Is EpX elastic, inelastic or unitary elastic? Why?
          If the price is cut, does total revenue increase, decrease or not change?

(06 Marks)

   (iii) Find the income elasticity and elasticity for advertisement of demand for QX, given PX = Rs.400. The other variables are as given in part (i) and interpret your answer.

(05 Marks)

(Total 20 Marks)

2.

(a) The Demand for gasoline sold by the Black Gold refining company has been estimated as

$$Q_B = 0.22 \, P_B^{-0.95} \, I^{1.4} \, A_B^{0.3} \, P_c^{0.2} \, P_{op}^{0.6}$$

   Q_B = Number of gallons of gas sold each month (million)
   P_B = price per gallon charged by Black Gold
   I = level of per capita disposable personal income in Black Gold's market area
   A_B = Amount of advertising expenditures made by Black Gold.
   P_c = price per gallon charged by competitors
   P_{op} = driving age population in Black Gold's market area

(i) What interpretation can you give to the exponents of P_B, I, A_B, P_c and P_{op}?

(ii) As the exponents of I is 1.4, what could you say about product B ?

(06 Marks)

(b) Define Iso- quant and Iso cost curves. Why would information given by these two curves be useful to the firm?

(04 Marks)

(c) What are ridge lines? What is their significance to a firm?

(04 Marks)

(d) What combination of goods X and Y should a firm produce to minimize costs when the joint cost function is $C = 6X^2 + 10Y^2 - XY + 30$ and the firm has a production quota of $X + Y = 34$?

(06 Marks)

(Total 20 Marks)

3.

(a) Under which conditions does a firm get its monopoly power?

(04 Marks)

(b) Trench wich Corporation manufactures power trenching machines in the United States. It also sells them in the international market. The annual domestic demand for its product is given by

$$Qus = 30,000 - 2Pus$$

Annual foreign demand for the same machine is given by the equation

$$Q_f = 50,000 - 4P_f$$

Trench's total cost function is

$$TC = 20,000 + 2000Q + 0.5Q^2$$

(i) Assume the firm practices price discrimination. What will be its price per unit in each of the two markets, and how many machines will it sell in each market?

(08 Marks)

(ii) Calculate the firm's total profit and cost under the preceding conditions

(03 Marks)

(iii) Find the firm's profit –maximizing price, sales quantity in each market, and total profit under the assumption that it does not discriminate in pricing.

(05 Marks)

(Total 20 Marks)

4.

(a) What is the definition of the net present value (NPV) of a capital project? What NPV rule should be followed in classifying capital projects as acceptable or unacceptable? Why?

(05 Marks)

(b) Hamstrung is contemplating an investment in a new food processing plant. Management's best estimate of the project's price is Rs.620,000.The plant will have an indefinite life, but management expects to divest it at the end of 12 years at an estimated after-tax salvage value of Rs.273000.Annual net inflow from operations are expected to be Rs.60000.

(i) Is the project acceptable at a discount rate of 9%?

(07 Marks)

(ii) What would happen if a discount rate of 6% were applied to the project?

(05 Marks)

(iii) What percentage of yield that management can enjoy on its investment?

(03 Marks)

(Total 20 Marks)

5.

Hank Burdue makes sure his chickens get at least 24 units of iron and 8units of vitamins each day. Corn X1, provides 2 units of iron and 5 units of vitamins. Bone meal X2 provides 4 units of iron and 1 unit of vitamin. Millet X3 provides 2 units of iron and 1 unit of vitamin. Feed costs are Rs. 40, Rs.20 and Rs.60 respectively?

(a) Formulate the dual model

(04 Marks)

(b) Solve the dual model using simplex method

(10 Marks)

(c) Interpret your results

(06 Marks)

(Total 20 Marks)

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