

Roll Number:

Thapar University Patiala
School of Management & Social Sciences

Mid Semester Exam, March 10, 2010

Time: 02 Hours; MM: 30

HU: 201 Engineering Economics

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Note: Attempt all questions

- Q1 a State giving reason whether the following are True or False:
- i. There is a decrease in the demand for a commodity when the price of a substitute commodity increases. 1
 - ii. Demand is inelastic if the percentage increase in quantity exceeds the percentage decrease in price. 1
 - iii. Government subsidization of firms producing Good A results in an increase in the demand for Good A. 1
- b The production function is given as: $Q = -L^3 + 5L^2 + 10L$
- i. Which Law of Production is revealed by this production function? 1
 - ii. At what level of Labour employment does the Total production begin to decline? Also calculate the point of Inflexion? 2
- Q2 a In the recent Budget 2010-2011, The prices of petrol and Diesel have increased. Is the demand for petrol and diesel elastic or less elastic: i) in the short Run ii) in the long Run iii) what are its implications on Consumer demand and Government Revenue. 2
- b The McNight Steel company demand curve is given as: 4
- $Q_s = 5,000 - 1000 P_s + .1Y + 100 P_a$
- Where Q_s is demand for steel in thousands tons per year, P_s is price of steel in dollars per pound, Y is income per capita, and P_a is price of aluminum in dollars per pound. Initially price of steel is \$1, per pound, Income per capita is \$20,000 and the price of aluminum is \$0.80 per pound. Calculate:
- i. How much steel will be demanded at initial prices and income?
 - ii. What is the point elasticity at initial values?
 - iii. What is the point cross elasticity between steel and aluminum? Are steel and aluminum substitutes or complements?
 - iv. If the objective is to maintain the quantity of steel demanded as computed in part (i) what reduction in steel prices is necessary to compensate for a 0.20 reduction in price of aluminum
- Q3 a The total and marginal cost functions for Advance Electronics, Inc., are:
- $TC = 200 + 5Q - 0.04Q^2 + 0.001Q^3$
 $MC = 5 - 0.08Q + 0.003Q^2$
- P.R. Swensen, president of the company, determines that knowing only these equations is inadequate for decision making. Determine the following:
- i. Determine the level of Fixed cost (if any) and equations for average total cost, average variable cost, average fixed cost. 1
 - ii. Determine the rate of output that results in minimum average variable cost. 2
 - iii. If fixed cost increases to Rs 500, what output rate will result in minimum average variable cost? 1
- b Is the price elasticity of demand for a particular brand of a product (e.g. Amul (chocolate, icecream)) greater than that for the product in general (e.g. Ice -Cream)? Why? Or Why not? Is this difference the result of a difference in the size of the income effect or the substitution effect? 2
- Q4 a The following are some costs incurred by a shoe manufacturer. Decide whether each one is a fixed cost or a variable cost or has some element of both. 3
- (a) The cost of leather. (b) The fee paid to an advertising agency. (c) Electricity for heating and lighting. (d) Electricity for running the machines. (e) Overtime pay. (i) Depreciation of machines.
- b What are Ridge lines? What is their significance for a firm? 3
- Q5 a Determine whether the following production functions. Show constant increasing or decreasing returns to scale? 3
- (i) $Q = L^{0.60} K^{0.50}$ (ii) $Q = 5 K^{-5} L^{-6}$
(iii) $Q = 4L + 2K$
- b An investigation into the demand of TV sets in the following satellite towns has supplied the following data: 3

Towns	Populations(*000)	Demand for TV sets(*000)
A	12	20
B	15	38
C	15	38
D	18	40
E	18	45
F	22	40

Estimate the number of TV sets demanded in G town with a population of 30,000?

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