

Birla Institute of Technology and Science, Pilani
I Semester 2023-24
Pricing Analytics MPBA G526
Mid-Term Examination

Max. Time: 90 Minutes

Date: 11-10-2023

Max. Marks: 20

Instructions: Please provide all necessary calculations.

Q. 1 What do you understand by the value pricing thermometer? Based on the information given in the following table calculate True Economic Value of the New product. Discuss the scenario if buyer think that 3% is too optimistic and consider 7% probability of system crash. (1+1=2)

	New Product	Alternative Product
Probability of system crash	3%	20%
Cost of system crash	100000	100000
Hours of operation	2500	2500
Operating cost per hour	15	10
Price	?	75000

Q. 2 The firm must segment the market based on certain criteria so that they can charge different prices for similar products. Discuss any two criteria of segmentation for price differentiation. (2)

Q. 3 An amusement park will introduce a new pricing scheme before the next season. It wants to set an entrance fee and a fee for each ride in the park. A market survey shows that the price– response function for the entrance part can be described by the following function: (2)

$$d(E) = 5000 - 100E$$

where E is the entrance fee. The price– response function for each ride can be described by:

$$d(p) = 5000 - 500p$$

where p is the price per ride. The variable unit costs are estimated at \$2.00 per entrance and \$1.50 per ride. What is the optimal (profit- maximizing) two- part tariff in this case?

Q. 4 Assume that the demand for the chemical is 50,000 pounds at 10 cents per pound but drops to 40,000 pounds at 11 cents per pound. Calculate the slope of the price response function. (1)

Q. 5 You have the following information about the relation between price and number of units sold for a service offered by a given firm (In the table below). The variable costs are \$20/ unit and the fixed costs are \$500. Calculate for all values given in the table, (a) marginal revenue; (b) marginal costs; and (c) profit across the various levels of units sold. What is the profit- maximizing price/ quantity in the given case? (4)

Price	100	90	80	70	60	50	40	30	20	10	0
Units Sold	0	10	20	30	40	50	60	70	80	90	100

Q. 6 An electronics goods retailer faces a constant-elasticity price-response function with an elasticity of 2.5 for a popular model of television. It costs him \$180 apiece to purchase the televisions wholesale. At the optimum price, calculate the contribution margin ratio and the price to maximize total contribution. (1)

Q. 7 A supplier is selling hammers in two cities, Pleasantville and Happy Valley. It costs him \$5.00 per hammer delivered in each city. Let p_1 be the price of hammers in Pleasantville and p_2 be the price of hammers in Happy Valley. The price-response curves in each city are: (2+2=4)

$$\text{Pleasantville: } d_1(p_1) = 10,000 - 800p_1$$

$$\text{Happy Valley: } d_2(p_2) = 8,000 - 500p_2$$

a) Assuming the supplier can charge any prices he likes, what prices should he charge for hammers in Pleasantville and Happy Valley to maximize total contribution? What are the corresponding demands and total contributions?

b) An enterprising arbitrageur discovers a way to transport hammers from Pleasantville to Happy Valley for \$0.50 each. He begins buying hammers in Pleasantville and shipping them to Happy Valley to sell. The supplier decides to eliminate the arbitrage opportunity by ensuring that his selling price in Happy Valley is no more than \$0.50 more than the selling price in Pleasantville (and vice versa). What is his new selling price in each city? What are his corresponding sales and total contribution?

Q. 8 The football game between Stanford and the University of California at Berkeley is going to be held at Stanford Stadium, which has 60,000 seats. Customers can be segmented into students (those carrying a student ID card) and the general public. The price-response curves for each of these segments is:

$$\text{General Public } d_g(p_g) = 120000 - 3000p_g$$

$$\text{Students } d_s(p_s) = 20000 - 1250p_s$$

Calculate the maximum WTP for both segment of customer, optimal price in case of single price charged from all customers. What will be the price if, Stanford charge different price to student group and general public? (1+1+2=4)