NAME:

AEM 4160: STRATEGIC PRICING
CORNELL UNIVERSITY
PROFESSOR JURA LIAUKONYTE

FEBRUARY 21, 2012

100 points = 100%
103 points = 103%

Show all work. Write legibly.
Calculators permitted.
No computers.

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<th>Points:</th>
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1. **(26 points total)** Consolidated Salt Company sells table salt to both retail grocery chains and commercial users (e.g., bakeries, snack food makers, etc.). The demand function for each of these markets is:

   Retail grocery chains:  \( P_1 = 180 - 8Q_1 \)

   Commercial users:  \( P_2 = 100 - 4Q_2 \)

   where \( P_1 \) and \( P_2 \) are the prices charged and \( Q_1 \) and \( Q_2 \) are the quantities sold in the respective markets. Consolidated's total cost function for salt is:

   \[ \text{TC} = 50 + 20Q \]

   a) **(12 points)** Assuming that Consolidated is effectively able to charge different prices in the two markets, what are the profit-maximizing price and output levels for the product in the two markets? What is Consolidated's total profit under this condition?
b) **(2 points)** This is an example of what kind of price discrimination?

c) **(3 points)** Assuming that Consolidated is required to charge the same price in each market, what would happen to the total profits? Explain why.

d) **(9 points)** Calculate the price elasticities in each of the markets at their equilibrium levels. Explain the relationship between the price and price elasticity in each of the markets.
2. (Total 19 points) You are the head of the marketing division of Sirius XM radio. The marketing department has provided you with the following key items of information:
   - Monthly ARPU (average revenue per unit): $30
   - Monthly Cost-to-Serve: $14
   - Acquisition cost of each additional customer: $120
   - Interest rate: 5%
   - Loss of customer base per month (churn rate): 2%

a) (6 points) Calculate the time required to break even on the acquisition cost

b) (13 points) In the satellite radio industry, the monthly margin is relatively fixed across periods. Calculate the Lifetime Value of a Customer (LTV).
3. (Total 12 points) What were the three pricing options considered by Virgin’s executives prior to the launch of Virgin Mobile? (5 points) Pick one strategy and discuss the pros and cons of that strategy, bearing in mind Virgin’s market position at the time (7 points).
4. (Total 8 points) HHI
a) (5 points) What does HHI measure? How can you calculate it?

b) (3 points) Fill this in:
The U.S. Department of Justice considers a market with a result of:

Less than ____________ to be a competitive marketplace;
From __________to __________ to be a moderately concentrated marketplace;
_________ or greater to be a highly concentrated marketplace.

5. (Total 18 Points) Bundling and Tying.
a) (4 points) What is the difference between mixed bundling and pure bundling?
b) **(8 points)** Explain how tying the purchase of printers and print cartridges, razors and blades, computer consoles and computer games, etc. is like second degree price discrimination.

c) **(6 points)** Consider pure bundling. Under what condition(s) do profits improve with bundling?

6. **(Total 20 Points)** Assume that a cell-phone provider can identify and separate the low demand (e.g. students and senior citizens) and high demand (e.g. working households) consumers perfectly (i.e. by asking them to show student or senior citizen IDs). The marketing department presented you with the following demand graphs for both types of potential consumers:
a)  **(5 points)** What is the optimal two part tariff for low demand consumers (price per minute and fixed fee)?

b)  **(5 points)** What is the optimal two part tariff for high demand consumers (price per minute and fixed fee)?

c)  **(6 points)** Besides being able to identify the low and high demand consumers, what other conditions are necessary for successful price discrimination?

d)  **(4 points)** Give 2 examples (besides cell phone pricing) of two part tariffs.