GENERAL INSTRUCTIONS: Write your name and your TA’s name on the front cover of each of two blue books. The exam has 3 parts. Put Part I and Question II.1 in one blue book, and Question II.2 and Part III in a second. The exam is worth 100 points. Point assignments are given in the instructions for each part. Check your calculations on scratch paper but be certain to put all of your answers in the bluebooks.

I. TRUE or FALSE or UNCERTAIN and EXPLAIN: Choose 4 of the following 6 statements, decide whether each is true or false or uncertain, and then explain the reasoning behind your answer in a few sentences; provide any assumptions you may think necessary to draw your conclusion. We will only grade the first 4 that appear in your bluebook. Each question is worth 7 points for a total of 28 points.

1. While retail sales of ready-to-eat breakfast cereals in the Bay Area exhibits an HHI of 1,840, this figure likely overstates the extent of concentration in this market.

2. When firms in an industry act as price takers, their index of scale economies, s, will be less than 1 when the industry reaches in equilibrium.

3. It is never profitable to sell a product below its cost of production and below the price charged by competitive firms.

4. A single-product monopolist who controls the quantity and the quality of its product will supply too little of both relative to the social optimum.

5. An auto manufacturer would never create a slow version of its popular sports car by merely disabling the fifth gear because all of its potential customers would prefer the faster version.

6. When two duopolists compete by setting price of their undifferentiated products, the industry will result in the Bertrand paradox.

II. MULTI-PART QUESTIONS: Answer all of the four parts of both of the following two questions. The point assignment for each subpart is given in [square brackets]. Together, the two are worth 48 points.

1. Suppose a dominant firm resides in an industry with (inverse) market demand of: \( P(Q) = 100 - Q \). Each of 10 competitive fringe firms has marginal cost given by: \( MC(q_f) = 80 + 10q_f \). Neither type of firm incurs fixed costs.

   a) [4] Derive the supply curve of the competitive fringe: \( S_f(P) = P - 80 \).
b) [4] Draw a large price-quantity diagram and insert industry demand and competitive fringe supply curves, carefully and completely labeling all points and lines.

c) [6] On a second diagram, draw in the residual demand of the dominant firm and clearly label it, and then add the dominant firm’s corresponding marginal revenue into this second diagram.

d) [6] Draw two marginal cost curves for the dominant firm in your second diagram that result in the following outcomes:
   i) MC\(_1\): The dominant firm chooses the same price and quantity as a monopolist
   ii) MC\(_2\): The fringe produces a positive amount.

++ Start Your Second Blue Book ++

2. Consider a Hotelling town served by two firms, one located at the far left end (firm L at \( z = 0 \)) and another at the far right end (firm R at \( z = 1 \)) of the one-mile town. As usual, \( M \) potential customers are evenly distributed along the mile interval, each one places a value of \( V \) on the homogeneous good sold by the firms, and incurs a per-mile transportation charge of \( t \). The prices charged by firms L and R, respectively, are \( p_L \) and \( p_R \). For simplicity, assume that all costs are sunk and that the entire market will be served.

a) [4] Draw a diagram illustrating the Hotelling town being sure to label all points and lines. Indicate the “effective” or “delivered” prices for both firms (as seen by the various customers located along the line) and give the algebraic expressions for those prices.

b) [8] Derive the location of the “marginal consumer”:
\[
z = \frac{p_R - p_L + t}{2t}
\]
(assuming \( V \) is large enough relative to prices that everyone in town makes a purchase). Then use this location to write down Firm L’s profit and show that its profit-maximizing price (given the price of Firm R) is:
\[
p_L = \frac{1}{2}(p_R + t)
\]

c) [8] Solve for the equilibrium prices charged by the two firms and explain how and why they vary with transportation cost \( t \).

d) [8] Suppose now that firms L and R merge to form a monopoly with two locations. Compute the prices that will now be charged by the monopolist and compare to the pre-merger prices. Do they rise or fall? Explain why.

III. INDUSTRY STUDIES: Choose just one of the three industries—BEER or STEEL or BREAKFAST CEREALS—and then answer all of the questions below for the chosen industry. This section has a total of 24 points.

1. [8] Describe the extent of scale economies in the industry, and give one cause for:
   a) increasing returns to scale,
   b) decreasing returns to scale.

2. [6] Give one example of likely scope economy that occurs in the production of products in this industry, and identify the source of that scope economy.

3. [10] Briefly describe the pattern of concentration over time in this industry in the U.S. Be certain to identify the significant events and economic forces underlying the major changes in concentration that
have occurred.