ECN 460/560, Spring 2005
Prof. Bruce Blonigen

NAME: _____
ID#: _____

MIDTERM - Version A

Wednesday, May 4

Note: Throughout this test you must always show calculations to receive credit.

Use the following information to answer questions 1-5. (5 points each)

Suppose you own the biggest hill in town (Spencer's Butte) and decide to put a ski lift on it to transport people to the top. To do this you have a large fixed cost of $100 each day, but then the extra cost to transport a customer up each day is a constant $5. The daily inverse demand for your ski lift is P=65-Q.

1) Write down an expression for the following concepts related to this firm each day (6 points):

Total Costs (TC): _____
Average Total Costs (ATC): _____
Marginal Costs (MC): _____

2) Assume you are a monopolist. Find the profit-maximizing output and price to charge each day. Also, calculate the daily profit you make. (10 points)

3) The Eugene City Council gets upset at your monopoly price and profits. They decide to force you to charge what a perfect competitor would charge, which is marginal cost. How much demand would there be at price equal to $5? How much profit would the firm make if they supplied the demand at a price of $5? (6 points)

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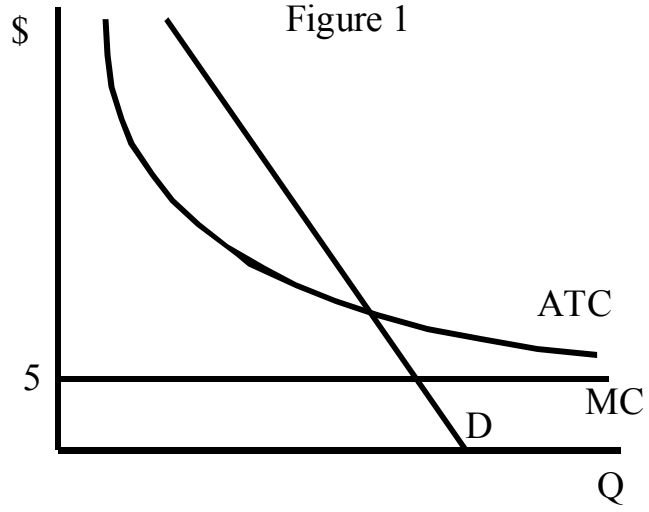
Continuation of Spencer Butte Ski Area problem:

4) Figure 1 below shows your costs and demand. In Figure 1 show the output the firm produces when you must charge $5. Label this Q^{MC}. Then graph the daily loss you make. Also, graph and label your AVC curve. (6 points)

Figure 1



5) Suppose the City of Eugene wants you to just break even (zero economic profit) by making you set your price equal to your average total cost. Show the level of output in Figure 1 above which you would just break even and label it Q*. (6 points)

Is this situation allocatively efficient? Why or why not?

Is this situation efficient in production? Why or why not?

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Use the following information to answer questions 6-8: The Eugene city council decides to only allow two firms to supply Bratwurst to the market and these firms (firm 1 and 2) compete in prices (a Bertrand game). Both firms have the same cost function: $C(Q) = 6Q$. However, the products are differentiated and inverse residual demand for each firm is the following.

Firm 1: $Q_1 = 20 - 2P_1 + 2P_2$
Firm 2: $Q_2 = 3 - 1.5P_2 + P_1$

6) Properly set up the profit maximization problem for Firm 2. Then set up the first-order conditions (F.O.C.) and show that firm 2's reaction function is: $P_2 = 4 + 1/3\ P_1$. (10 points)

7) One can show that Firm 1's reaction function is $P_1 = 8 + 1/2\ P_2$. Solve for both firms' optimal Bertrand prices. Show your calculations. Then graph and label both reaction functions on the axis below, marking intercepts. (12 points)

Continuation of Bratwurst problem:

8) Calculate the quantities that would be produced by each firm in equilibrium and then calculate the Herfindahl-Hirschman Index (HHI) for this Bertrand bratwurst market. (6 points)

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Answer questions 9-17 by filling in the blanks or circling true or false (4 points per blank or true/false question)

9) List two types of costs in the Competitive Strategy Game besides capacity costs and marginal costs.

a) _____
b) _____

10) Every game has three elements. List them.

a) _____
b) _____
c) _____

11) The notion that managers of firms have different objectives than the owners/shareholders is a classic example of the _____ problem.

12) Your firm has capacity of 100 units and a marginal cost of 50 for any units produced up to capacity. If the elasticity of marginal cost with respect to output for output > available capacity is 8, then how much is marginal cost on the 120^{th} unit? _____

13) The law of diminishing marginal returns explains why short-run marginal costs eventually rise. TRUE or FALSE

14) The price elasticity of demand for an individual perfectly competitive firm is zero. TRUE or FALSE

15) Allocative efficiency is attained when marginal revenue of the last unit is equal to marginal cost of providing it. TRUE or FALSE

16) Entry and exit rates by firms in a market are lower when sunk costs are higher. TRUE or FALSE

17) Some markets display a greater degree of product differentiation in the Competitive Strategy Game than others. TRUE or FALSE

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Use the following information to answer questions 18-21 (6 points each). Every year, the town of St. Joseph has a Fourth of July Parade that travels a mile through the town. There are two ice cream companies in town, Waldman's and Swanson's that must decide where to locate along the parade route. They each have a choice of locating at the beginning, middle or end of the parade route. The following strategic form of their game is shown below. Waldman's payoff is listed first in each cell.

		Swanson's		
		Beginning	**Middle**	**End**
Waldman's	**Beginning**	50, 50	25, 75	50, 50
	Middle	75, 25	50, 50	75, 25
	End	50, 50	25, 75	50, 50

18) Explain whether Waldman's has a dominant strategy using the definition of a dominant strategy.

19) Explain why Waldman's locating at the **end** of the parade route and Swanson's locating at the **beginning** of the parade route is NOT a Nash equilibrium, using the definition of a Nash equilibrium.

20) What is the Nash equilibrium or equilibria (plural) in this game. (Express this in terms of the strategies chosen by each player)

21) What if the City of St. Joseph banned ice cream trucks from the middle of the parade route, so that any truck located there would be fined and get a payoff of zero. What is the Nash equilibrium or equilibria (plural) in this game. (Express this in terms of the strategies chosen by each player)