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Write your name on the cover of the test booklet and nowhere else. Enclose this sheet with the booklet. Failure to follow these directions will cost you 1 point. The test has 100 points (to be scaled up to 170 points) and is scheduled to take 50 minutes. Therefore, expect to spend 1 minute for every 2 points. For example, a 12-point question should take 6 minutes. I cannot give extra time because some students have a class after your class.

1) (10 points) For EITHER the industry in Part A OR the industry in Part B, determine whether it is an example of perfect competition, monopolistic competition, oligopoly, or monopoly. Explain your logic.
A) Restaurants in Pittsburgh
B) Gasoline

2) (12 points) Answer EITHER Part A OR Part B.
A) Suppose there are five firms in the industry. The largest has $500 worth of sales. The next two have $200 worth of sales each. The last two have sales of $50 each. Calculate CR4, CR8, and HHI. Show all work.
B) In Part A, it appears very simple to do the calculations. However, in the real world it is not easy to calculate CR4, CR8, and HHI. In fact people can get very different results. Explain why it is difficult.

3) (12 points) Answer EITHER Part A OR Part B.
A) What is the economic reason that the MR curve is below the demand line for downward sloping demand curves?
B) If the demand curve is given by $P = 100 - 3Q$. Find the total revenue function and use that to find the marginal revenue function. Show all work and BRIEFLY state what you did.

4) (16 points) Answer EITHER Part A OR Part B.
A) Draw the supply and demand for a good we export. Prove we export the good.
B) What is the equation for profit maximizing for all firms? Explain why that maximizes profits.

5) (22 points) Answer EITHER Part A OR Part B.
 A) Suppose a Cournot duopoly is facing an industry demand curve of $P = 113 - \frac{1}{2}Q$. If the firms are identical and have a marginal cost of $16/unit, then draw the demand for the industry and the marginal cost curve. Use that to derive the best-response-function for one of the firms. Explain how you derived it. Do NOT worry about plotting the best response function or finding the equilibrium outputs.
B) Draw the kinked demand curve. Explain why it takes its shape and why it means that firms may not change their prices even if their costs change.

6) (28 points) Answer EITHER Part A OR Part B.
A) Draw the ATC/AVC/MC/D diagram for a perfectly competitive firm which is making positive profits. Explain how you know they are making positive profits. Beside it draw the supply and demand for the industry. Find the price charged and the quantity supplied by the firm and by the industry. State how you found them. Illustrate what will happen over time on the two graphs. Explain why the curve(s) moved as drawn.
B) Draw the ATC/AVC/MC/D diagram for a monopolistically competitive firm which is losing money but staying in business. Find the quantity produced and the price charged. Explain how you found them and how you know that they are making negative profits but still in business. Illustrate what will happen over time.  Explain why the curve(s) moved as drawn. Find the new quantity produced and new price charged. Why don't we have an industry supply and demand diagram in Part B?