Name_____

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2nd Exam

You have 75 minutes to complete this closed-notes, closed-book exam.

1. A firm has production function Q = min[3K, L]. K costs $20 per unit; L costs $5 per unit.

a) Graph this firm's isoquant for 100 units of output. Include at least 3 points on your isoquant, and label the numerical coordinates of the 3 points.

b) Calculate the cost-minimizing use of capital and labor.

c) Is this firm's production consistent with the Law of Diminishing returns? Explain carefully, and support your answer with at least 1 calculation.

d) Is this firm's production consistent with increasing returns to scale? Explain carefully, and support your answer with at least 1 calculation.

2. A perfectly competitive market has demand curve Q = 1000 – 5P and supply curve Q = 5P. An individual seller in this market has cost curve $C = 200 + 5Q^2$

a) Calculate the individual seller's profit-maximizing price, quantity and profit (or loss). (Please be clear whether the firm has a *profit* or a *loss*.)

Price_____ Quantity_____ Profit (or loss)_____

b) Carefully illustrate this firm's situation on a graph that includes its demand, marginal revenue, marginal cost, average total cost, and average variable cost. (Number are not required on this graph, nor is a precise scale. Please take care with the SHAPES of the curves. Some of the curves may have different shapes than those encountered in class.)

3. A monopoly has

demand curve	Q = 100 – 5P and
AVERAGE cost curve	average cost = 5Q

a) Calculate the firm's profit-maximizing price and quantity.

Price_____ Quantity_____

b) Calculate the price ceiling required to ensure social efficiency.

Ceiling_____

c) Does this firm require a subsidy in order to be socially efficient? Support your answer with at least 1 calculation.

4. A firm has demand for its product equal to

$Q = 500 - 2P$

It can produce the product in either of two plants, with total costs

$C_1 = 100 + Q_1^2$ $C_2 = 10 + 2Q_2^2$

Calculate the profit maximizing level of production in plants 1 and 2, the profit-maximizing price, and total profits (or loss).

Q_1_____ Q_2_____ Price_____ Profits (or loss)_____

5. Explain whether each statement below is true or false. Do not repeat the statement or a slightly altered version of it in your explanation. Use concepts developed in this class in your explanation. Merely writing "true" or "false" results in zero credit.

a) An owner of a perfectly competitive firm will live in poverty in the long run, since her/his firm will have zero profits.

b) A firm maximizes total profits at the level of output at which price exceeds average total cost by the largest amount.

c) A firm should shut down if its revenues are less than its fixed costs.

d) The "haircut" market is an example of an market in which production exhibits economies of scale.

e) Older, established firms are more likely to benefit in the future from the "learning curve" effect than are newer firms (of the same size as the older firms).