

Name: _____

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AP Microeconomics — Practice Exam

Instructions: Answer ALL three questions. Question 1 is the long question (10 points); Questions 2 and 3 are short questions (5 points each). The 60 minutes includes a 10-minute reading period. Show your work for every calculation and explain your reasoning where asked. No calculator permitted.

Time Limit: 60 minutes

[10 points] 1. Clearwater Bottling is one of many identical firms in the perfectly competitive market for cases of bottled spring water. The firm's total fixed cost is 24 dollars per day. Its total variable cost is 8 dollars for 1 case per day, 14 dollars for 2 cases, 18 dollars for 3 cases, 24 dollars for 4 cases, 32 dollars for 5 cases, 42 dollars for 6 cases and 54 dollars for 7 cases. The current market price is 9 dollars per case.

[2 points] (a) Using marginal analysis, determine the number of cases Clearwater should produce per day to maximize profit or minimize loss. Explain how you determined this.

[1 point] (b) Calculate Clearwater's economic profit or loss at the output you found in part (a). Show your work.

[2 points] (c) Should Clearwater continue to operate in the short run, or shut down? Explain, using numbers from your calculations.

[2 points] (d) Explain how this market will adjust in the long run, and determine the long-run equilibrium market price and the daily output of each firm that remains in the industry. Show your work.

[1 point] (e) In the long-run equilibrium you identified in part (d), is the market outcome allocatively efficient? Explain.

[2 points]

- (f) Start from the long-run equilibrium in part (d) and assume the market price stays at that level in the short run. (i) The government now requires every firm to buy an operating license costing 12 dollars per day. Will Clearwater's profit-maximizing output increase, decrease or stay the same in the short run? Explain. (ii) Suppose that instead of the license the government imposes a tax of 2 dollars per case on producers. Determine Clearwater's new profit-maximizing output in the short run. Show your work.

[5 points]

2. Consider the market for bottled cold-brew coffee in a town. At a price of 4 dollars per bottle, 1,100 bottles are demanded per week; at a price of 6 dollars, 900 bottles are demanded, and demand is linear between these points. Before any tax, the market is in equilibrium at a price of 5 dollars and a quantity of 1,000 bottles per week. The town then imposes an excise tax of 1.50 dollars per bottle, collected from sellers. After the tax, the price consumers pay rises to 6 dollars per bottle and the quantity sold falls to 900 bottles per week.

[1 point]

- (a) Using the midpoint method, calculate the price elasticity of demand between the prices of 4 dollars and 6 dollars. Show your work.

[1 point] (b) Is demand elastic, inelastic or unit elastic over this price range? Using total revenue, explain what happens to sellers' total revenue when the price rises from 4 dollars to 6 dollars.

[1 point] (c) Calculate the price per bottle that sellers receive after the tax, and the amount of the tax per bottle that is paid by consumers and the amount paid by sellers. Show your work.

[1 point] (d) Calculate the government's weekly tax revenue and the deadweight loss caused by the tax. Show your work.

[1 point] (e) Using your answers to parts (a) and (c), explain why the larger share of the tax falls on the side of the market that it does.

[5 points] 3. Pine Ridge Nursery sells potted plants in a perfectly competitive product market at 5 dollars per plant and hires workers in a perfectly competitive labor market at the going wage of 65 dollars per day. With a fixed amount of greenhouse space, the nursery's total output per day is 20 plants with 1 worker, 38 plants with 2 workers, 54 plants with 3, 68 plants with 4, 80 plants with 5 and 90 plants with 6 workers.

- [1 point] (a) Calculate the marginal revenue product of the fourth worker. Show your work.
- [1 point] (b) Determine the number of workers Pine Ridge should hire per day to maximize profit at the wage of 65 dollars. Explain how you determined this.
- [1 point] (c) Suppose the market price of potted plants rises to 6 dollars while the wage stays at 65 dollars. Determine the number of workers the nursery will now hire, and explain the effect of the price change on its demand for labor.
- [1 point] (d) Return to the original price of 5 dollars per plant. The town sets a minimum wage of 75 dollars per day. Determine the number of workers the nursery will hire. Show your work.
- [1 point] (e) Explain why the nursery's demand curve for labor slopes downward.