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Economics 201

Midterm #2: Solutions

Part 1 (Multiple Choice)

1. B
2. C
3. A
4. C
5. E
6. A
7. D
8. E
9. C
10. C
11. D
12. B
13. D
14. A
15. D
16. A
17. B
18. C
19. D
20. B
21. C
22. B
23. A
24. D
25. C
26. B
27. A
28. C
29. D
30. C
31. B
32. E
33. A
34. E
35. A

Part II. Short Answer Questions (30 pts overall)

Credit for these problems will come from not only showing you know the correct answer but also that you show any relevant work, or make it very clear as to how you got your answer. No supporting work and just an answer will get no credit, whether the actual answer is correct or not.

Assume the equations below correspond with a profit maximizing, perfectly competitive firm. Use these equations to answer questions #1-4. Note that question #5 uses table 1 on the previous page.

$TC = \$350$	*if* $q = 0$
$TC = 500 + 10q + 4q^2$	*if* $q > 0$
$MC = 10 + 8q$	*if* $q > 0$

[5 pts] *1. If the firm is currently producing 20 units of output, then what are the firm's greatest possible profits?*

If q = 20 and P = MC, then P = 170

Profit = (170 x 20) – (500 + 10(20) + 4(20)^2)
Profit = 1100

[5 pts] *2. Assume all you know is that this profit maximizing firm has an average variable cost of $50. Based on what you know about a firm like this, in terms of how the firm behaves, what must be the firm's current profit?*

If $AVC = \frac{10q + 4q^2}{q}$ and AVC = 50, then q = 10

If q = 10 and P = MC, then P = 90

Profit = (90 x 10) – (500 + 10(10) + 4(10)^2)
Profit = -100

[5 pts] *3. If the market price is currently $106 (i.e. P = 106), then what would be the firm's greatest possible profits?*

If P = 106 and P = MC, then q = 12

Profit = (106 x 12) – (500 + 10(12) + 4(12)^2)
Profit = 76

Part II. Short Answer Questions cont.

*Grading on #4 will consider how accurately you answer the question, but also (given the information provided) how well you demonstrate a **complete** understanding of the concept being addressed within this question.*

[10 pts.] *4. Assume we have profit maximizing firms who produce used cars in a perfectly competitive market, where we'll assume used cars are a normal good. Assume that the firms in this market currently face a price that is equal to both marginal cost and average cost.*

Discuss/show how this market would adapt over the long run to recession, which represents a significant decrease in consumer income.

If firms are producing where P = MC and also P = AC, then firms are producing at the breakeven point and $\pi = 0$.

When income decreases, then there is a decrease in market demand because used cars are a normal good. After demand decreases, the market price decreases and firms are now earning $\pi < 0$.

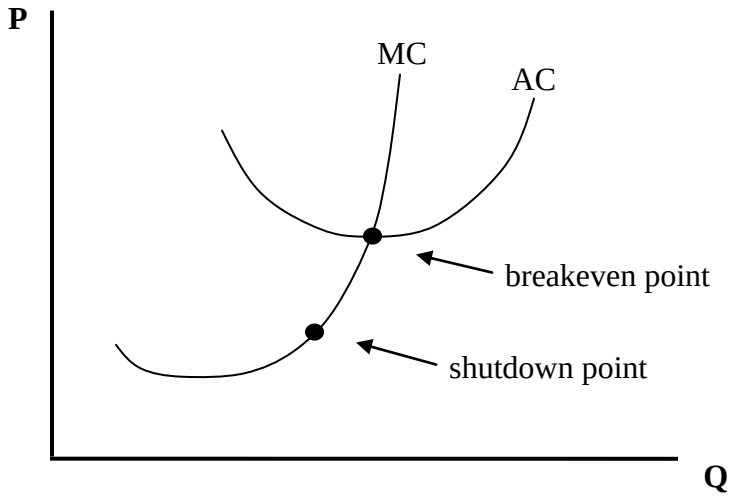
Over the long run, $\pi < 0$ creates an incentive for firms to exit the market. The exit of firms will decrease the number of suppliers in this market and this causes the market supply curve to decrease. As supply decreases, the market price increases. A higher market price allows existing firms to earn greater profit. This will continue until all firms in the market are once again earning $\pi = 0$.

Part II. Short Answer Questions cont.

Grading on #5 will consider how accurately you answer the question, but the grading will focus on how well you demonstrate an understanding of diminishing marginal returns, as well as the profit maximizing process for perfectly competitive firms.

[5 pts.] *5. Will a profit maximizing (perfectly competitive) firm ever produce at a point where the firm experiences diminishing returns? Explain.*

Remember that no firm will ever produce at a point that is below the shut down point, since the firm would lose less by being closed. The shutdown and breakeven points are illustrated on the graph below.



Remember that diminishing returns occurs when the MPL curve is decreasing, but since MPL and MC have an inverse relationship, we would also observe diminishing returns when MC is increasing.

Given that firms will only produce above the shutdown point, the graph shows us that firms will only produce where MC is increasing. Therefore, firms certainly do produce when they experience diminishing returns. Note that we're not saying if the firm experiences diminishing returns, then the firm will not produce. We're saying that if the firm is producing, then the firm will experience diminishing returns.