

Econ 001: Midterm 2 (Dr. Stein) Answer Key
November , 2010

Instructions:

- This is a 60-minute examination.
- Write all answers in the blue books provided. Show all work. Use diagrams where appropriate and label all diagrams carefully.
- Write your name and your Recitation Instructor's name in every blue book that you use.
- This exam is given under the rules of Penn's Honor system.
- All blue books, blank or filled, must be handed in at the end of this exam. No blue books may be taken from the room.
- No calculators are allowed!

The Midterm has 2 parts.

Part 1 consists of 7 multiple-choice questions. Please write you answers in blue book 1.

Part 2 consists of 2 short answer questions. Please use a separate blue book for each answer.

**Part I: Multiple Choice Questions (Best 7 out of 8: 4 points each/28 points total):
Please answer all MC questions. Only the best 7 will count towards your grade.**

1. We learn that between $P=\$1$ and $P=\$2$ the demand for chewing gum is perfectly inelastic. Which of the following statements must be true between these prices

- I. Chewing gum is an inferior good.
 - II. The income effect is equal to the substitution effect.
- a. Only I.
 - b. Only II.
 - c. Both I and II.
 - d. Neither I nor II.

2. A company selling baseball caps has the following MR and MC:

| | | | | | |
|----|----|---|---|---|---|
| q | 1 | 2 | 3 | 4 | 5 |
| MR | 10 | 9 | 8 | 7 | 6 |
| MC | 2 | 3 | 4 | 7 | 8 |

Using this information, we may assume the company:

- I. produces in a perfectly competitive market
 - II. produces with a technology exhibiting diminishing marginal productivity
- a. only I
 - b. only II
 - c. Both I and II
 - d. Neither I nor II

3. Using the information from the question above, how many baseball caps will this firm sell?

- a. 3
- b. 4
- c. 5
- d. The answer depends on the price

4. When average variable cost is increasing, which of the following must be true

- a. average total cost must be increasing
- b. average fixed cost must be increasing
- c. marginal cost must be above the average variable cost
- d. all of the above
- e. a and c
- f. a and b

5. Assume Corn & Company produces corn, and the market for corn is perfectly competitive. The price of corn is \$8. $TC = 2 + 2q^2$ and $MC = 4q$. Which of the following is true?

- a. They will produce two units of corn
- b. There will be entry into this industry in the long-run
- c. \$8 is greater than the minimum of the ATC curve
- d. All of the above are true

6. A perfectly price discriminating monopoly is

- a. inefficient because there is no consumer surplus.
- b. efficient because it produces where marginal cost equals marginal benefit.
- c. inefficient because it produces where marginal cost equals marginal revenue but marginal cost is greater than marginal benefit.
- d. inefficient because it produces where marginal cost equals marginal revenue but marginal cost is less than marginal benefit.

7. Which of the following distinguishes the monopolistic competition model from perfect competition?

- a. In the long run, monopolistically competitive firms make zero profits.
- b. Monopolistically competitive firms produce at a quantity at which price exceeds marginal cost.
- c. Monopolistically competitive firms produce where $MC = MR$.
- d. In the long run, monopolistically competitive firms have excess capacity.
- e. a and b
- f. b and d
- g. b, c, and d.
- h. a, b, c, and d

8. Consider the recent Senate election between Pat Toomey and Joe Sestak. Each candidate can choose to use positive campaign advertisements or negative campaign advertisements. The payoffs to each candidate in the event of each decision are given in the following table. Sestak's payoffs are given in bold and Toomey's are given in italics.

| | | <i>Toomey</i> | |
|---------------|----------|----------------------|---------------------|
| | | Positive | Negative |
| Sestak | Positive | 8 , <i>10</i> | 0 , <i>8</i> |
| | Negative | 6 , <i>3</i> | 2 , <i>4</i> |

Which of the following statements is true?

- It is a Nash equilibrium for both candidates to use negative advertising.
- There is only one Nash equilibrium.
- If Sestak uses positive advertising then Toomey is better off using negative advertising.
- If Sestak uses negative advertising then Toomey is better off using positive advertising.

9. Extra Bonus question:

You did better than you expected on your past midterm. If the "wage" of your studying is how much benefit you get from studying, and the income effect is greater than the substitution effect, will you study more or less for your next midterm?

- more
- less

Feel free to explain in a sentence or two.

Answers:

1. C
2. B
3. B
4. C
5. D
6. B
7. F
8. A
9. B

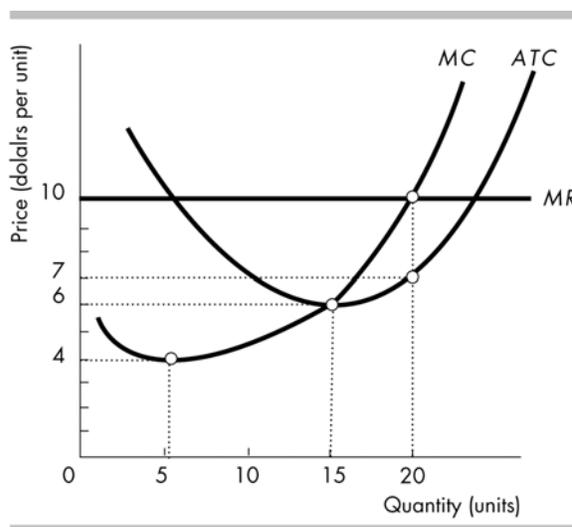
Part II: Short Answer Questions:

Please use a separate **Blue Book** to answer each of the 2 questions.

Q1. 32 Points

Cocoa beans are not usually the center of economic speculation & mystery, but they were this summer as Anthony Ward, known in Britain as “Choc Finger,” bought a very large quantity of cocoa beans. This question asks you to analyze the possible impact of this move on an individual cocoa farmer.

The following graph shows the costs facing, Joe, a typical cocoa farmer in a given year:



- a. Suppose the market was in a long run equilibrium. What would be the market price (p_0)? How much would Joe produce (q_0)?

- b. If market demand for cocoa beans is $Q=900-100P$, given your answer to part a, how many firms are active in the market?
- c. The increased interest of Mr. Ward in the cocoa market has driven the market price up to \$10. How much cocoa will Joe sell now (q_1)?
- d. Uri, a consultant in the Cocoa industry notices a mistake in the graph above. “The ATC of producing 20 units cannot be \$7, if it were, then Joe would continue to sell the same amount of beans he did before” he states. Can you explain his reasoning?

Note: From this point on, ignore this fact. It does not affect the rest of the question.

- e. What is the quantity demanded by the market at this price? Give the equation for a new demand curve, which accounts for Anthony Ward's demand, that is consistent with the quantity demanded at the new equilibrium price.
- f. An analyst working for M&M Mars is concerned that Mr. Ward is cornering the chocolate market and that he will cause a *permanent* increase in the price of cocoa beans. Do you agree with his analysis? Explain why or why not.

Answer Key:

a. $P_0 = \min ATC = 6$ $q_0 = 15$

Points:6

3 each

b. Answers:

$Q = 900 - 100 * 6 = 300 \rightarrow n = Q/q = 300/15 = 20$

Points:4

2 for method, 2 for answer

c. Answers:

$$q_1=20$$

Points: 4

d. Answers:

Note that if $P=10$ if the firm produces at q_0 profits=rev-cost= $P \cdot q_0 - ATC \cdot q_0 = 10 \cdot 15 - 6 \cdot 15 = 60$.

If $P=10$ and the firm produces at q_1 profits=rev-cost= $P \cdot q_1 - ATC \cdot q_1 = 10 \cdot 20 - 7 \cdot 20 = 60$.

Points: 6

2 points for profits at $q=20$

2 points for profits at $q=15$

2 points for comparison and pointing out that this is inconsistent.

e. Answers:

$$Q=n \cdot q=20 \cdot 20=400$$

Need to give an equation where $Q(P=10)=400$

One example is to just solve for a new intercept term as

$400 = I - 100(10)$ which implies that $I = 1400$ and the new demand equation could be $Q = 1400 - 100P$.

Points: 6

$$Q=n \cdot q=20 \cdot 20=400 : 3$$

Equation: 3

f. Answers:

No. The positive profits will bring entry into the market. This will push down the price. Entry will stop only when profits=zero or when P returns to the minATC.

Points: 6

Entry: 3

Back to $P=\min ATC$: 3

Note: loose 4 points if explain this change as a shift in the supply curve.

Q2. 40

Please show your work!

Levi's Jeans produces jeans using cotton, a variable input. Let us assume that all other inputs (e.g. machinery, marketing, and even labor) are fixed inputs. Further, suppose that the marginal cost of jeans is constant and equal to \$10 per pair.

Levi's is currently selling jeans in both the US & India and no other company may produce the same brand of jeans. Jeans in the US sell for \$30 and the same jeans sell for the equivalent of \$20 in India.

- a. Graphically show Levi's pricing decision in each market in a way that is consistent with these facts.
- b. On the eve of President Obama's visit to India an irate Tea Party member states, "Levi's is one example of a company that is benefiting India at the expense of American consumers." Using your answer to part a, do you agree?
- c. Malia Obama asks her father to bring back a pair of Levi's jeans from India. If we all had an easy way to get jeans from India, how would your analysis to part a change? Would firms be better or worse off in this case?
- d. Recent droughts in Asia have caused an increase in the price of cotton. How should Levi's react to these changes? Draw a new set of graphs explaining your answer.
- e. What will happen to Levi's profits?

Answer Key:

a. Answer:

Two markets graphs with the same constant $MC=10$. Downward sloping demand & MR in each. In market USA $MC=MR$ where $P=30$, in market India $MC=MR$ where $P=20$.

Points: 12

2 mkt: 2

Constant MC:2

Downward D & MR in each: 4

Q in each where $MC=MR$: 2

P in each: 2

b. Answer:

Looking for consistent answer that relates to the graph. For example: If Levi's sold jeans in the US mkt only they would set the same price.

Points: 5

“not at the expense of the US;: 2

Explanation:3

Note: If refer to equity (e.g., “not fair for US consumers”) but imply that this is “at the expense” of US consumers: 2 points only.

c. Answer:

In this case Levis would not be able to price discriminate between the two markets. Firms must be worse off as they have fewer pricing options than before.

Points: 6

No price discrimination: 3

Worse off: 3

d. Answer:

Need to draw MC higher in each market and new equilibrium quantities lowr & prices higher.

Points: 12

MC higher in each market: 4

Quantities lower:4

Prices higher: 4

e. Answer:

Profits must necessarily be lower. The firms could have sold at the new quantities and prices *before* the change in MC but did not, hence they must be worse off now.

Points: 5

Students can get full credit in one of three ways:

- 1. Stating that this is a monopolistically competitive mkt in which case profits=zero in the long run either way. This was not my intended answer, but it is internally consistent.**
- 2. As above: logical reasoning.**
- 3. Relating correctly to the profit equation. Note that this is hard: we know that Revenues will decrease ($MR=MC > \text{zero}$, so demand is elastic in this region), but it is hard to show that profits will necessarily go down without calculus. One way to do this is to recall that the MR is steeper than Demand, so we know that the change in P is less than the change in $AVC = \text{change in MC}$. Most students going down this path are likely to get only 2/5 points.**