ECON 001
Spring 2018
Midterm 2
March 27, 2018
Time Limit: 60 Minutes

Name (Print): _____

Recitation Section: _____

Name of TA: _____

- This exam contains 6 pages (including this cover page) and 10 questions. Check to see if any pages are missing.

- The exam is scheduled for 1 hour.

- This is a closed-book, closed-note exam, no calculator exam.

- Answer each multiple choice question by writing the correct answer on the line at the right margin of the corresponding question. Make sure that your answer is clearly written or it will be marked incorrect.

- Write your answers to the other questions in the spaces provided below them. If you don't have enough space, continue on the back of the page and state clearly that you have done so.

- Do not remove any pages or add any pages. No additional paper is supplied

- Show your work when applicable. Use diagrams where appropriate and label all diagrams carefully.

- You must use a pen instead of a pencil to be eligible for remarking.

- This exam is given under the rules of Penn's Honor system.

My signature certifies that I have complied with the University of Pennsylvania's Code of Academic Integrity in completing this examination.

Please sign here _____ Date _____

Question	Maximum	Grade
MC (Q1-8)	35	
1st SA (Q9)	35	
2nd SA (Q10)	30	
Total	100	

Multiple Choice Questions (best 8 out of 9: 40 points)

1. (5 points) Consider a firm facing the cost curves and MR curve as above. *Note: Picture Not Drawn to Scale.*
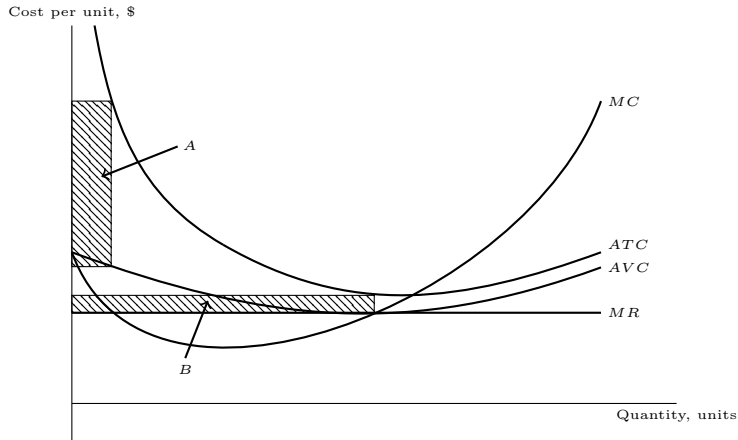
    A and B represent the two rectangles as indicated on the graph. Which of the following is true?

    A. $A > B$ B. $A = B$ C. $A < B$ D. Not enough information

                                                          1. _____

2. (5 points) Jenna is a skilled baker who decides to open a pie shop. She rents store space (signing a one year lease), and she takes out a loan at the local bank and uses the money to purchase three ovens. Six month later, a large chain opens a bakery two blocks away from Jenna's. As a result, her revenue, while sufficient to cover the wages of her employees and food costs, does not cover all of her rent and the interest rate and repayment costs on the loan she took out from the bank. Which of the following is correct?

    A. Jenna should shut down, because total revenue does not cover all the costs and she earns a loss
    B. Jenna should operate at a loss, because she has some total revenue left to cover her fixed cost
    C. Jenna should not renew her lease, because her fixed cost exceeds her total revenue
    D. Jenna should operate at a loss, because her fixed cost exceeds her total revenue

                                                           2. _____

3. (5 points) The market for asphalt is a perfectly competitive one and is currently in a long run equilibrium. The national government passes the construction of a new highway and as a result the market demand for asphalt increases. Once the market reaches a new long run equilibrium, what can we say about the new long run price of asphalt?

    A. The new long run price is greater than the previous long run price
    B. The new long run price is less than the previous long run price
    C. The new long run price is the same as the previous long run price
    D. Need more information to determine the price change

                                                           3. _____

4. (5 points) Which of the following MUST be true for the perfectly price discriminating firm:

    I. The firm produces the same quantity as a perfectly competitive market

    II. The demand is elastic at the point of production

    A. Only I   B. Only II   C. Both I and II   D. Neither I nor II

                                                            4. _____

5. (5 points) A single price monopoly faces a linear downward sloping demand curve and a constant positive marginal cost. The monopoly is currently selling 100 units of the good a price of $5. The government worried that the market is trading at an inefficient quantity, provides the firm with a lump-sum subsidy of $5000. Which of the following <u>could</u> be a result of the lump sum subsidy?

  I. Total Surplus generated by this market increases

  II. More units of the good are traded

  III. The Deadweight Loss increases

  A. I and II   B. II only   C. III only   D. II and III   E. I, II and III   F. None

5. _____

6. (5 points) Consider a monopolistically competitive firm that is in long-run equilibrium. If the firm is producing in the long-run equilibrium at a price of $10, which of the following is ***incorrect***?

  A. Marginal cost is less than $10   B. Average total cost is less than $10
  C. The firm is productively inefficient   D. The firm is allocatively inefficient
  E. None of the above statements is incorrect

6. _____

7. (5 points) Suppose Tim Cook, the CEO of Apple, and Lee Kun-hee, the Chairman of Samsung, meet at a shady bar in West Philadelphia and agree to collude. That is, they agree that they will both set a high price for their new smart phones and gain from sharing the market at a high price rather than sharing the market at a low price. Further suppose that the payoffs for each combination of prices chosen by the price setters are given in the following matrix (in million dollars). What is the Nash Equilibrium of this game?

<div align="center">

Samsung

		High Price	Low Price
Apple	**High Price**	5 4	1 6
	Low Price	7 0	4 3

</div>

  A. (High Price, High Price)
  B. (Low Price, Low Price)
  C. (5, 4)
  D. (4, 3)
  E. There is no Nash Equilibrium

7. _____

8. (5 points) Which of the following is true about government regulation and market efficiency?

  A. Government intervention will always lead to a more inefficient outcome
  B. Price floor may result in inefficiency as it may cause excess demand
  C. Price ceiling may result in inefficiency as it may increase demand while decreasing supply
  D. A monopoly can achieve efficiency if it produces a product that results in a negative externality – even without government intervention
  E. Deadweight loss is caused whenever there is excess demand or excess supply

8. _____

## Short Answer Questions (60 points total)

9. Suppose the market for soda is perfectly competitive, with a market demand $P = 20 - 0.01Q$ (where Q is the market quantity, in ounces). There are 100 identical firms in the market with the following costs, where q is the individual quantity, in ounces:

$$MC = q$$
$$AVC = 0.5q$$
$$FC = 95$$

All costs are in cents (1 cent $= \$0.01$)

(a) Derive the market supply curve based on the information above.

(b) What are the market equilibrium price P (in cents) and quantity Q? What is the quantity that each firm produces q?

(c) What is the profit (in cents) of each firm in the short run? Will firms enter or exit the market in the long run? Explain.

(d) An economic study shows that the *consumption* of soda generates a negative externality on society, as it increases obeseity rates and potential healthcare expenses. It is estimated that the marginal social benefit is 4 cents per ounce *lower* than the marginal (private) benefit.

   i. In the graph below, draw the Marginal Private Benefit (Demand), the Marginal Cost (Supply) as well as the Marginal Social Benefit. Label the market output Q found in part (b) and the socially efficient output Q_E. Calculate Q_E.

P (cents)

0   Q (in thousands)
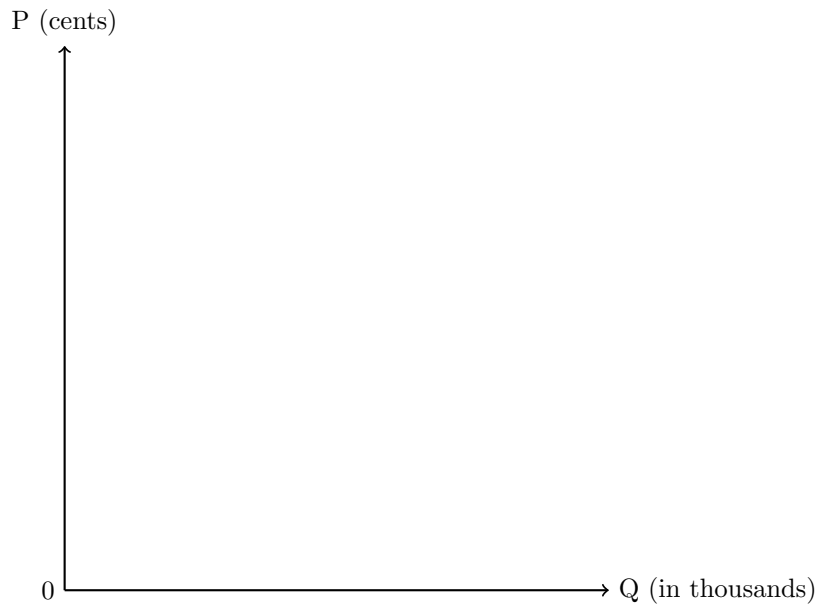
   ii. Does the market under-provide or over-provide soda? Label the Deadweight Loss (DWL) generated by the market on the graph from part (d)i., and calculate it.

   iii. The government is considering imposing a tax in this market in order to reach the socially efficient output. What should be the tax per unit? What will be the price paid by buyers and the price recived by sellers?

10. PECO is a natural monopoly of electricity supply for Philadelphia residents. PECO faces the inverse demand curve of $P(Q) = 200 - 2Q$ and costs of: $TC(Q) = 40Q + 400$, $MC = 40$.

(a) What price and quantity will PECO provide as a profit-maximizing monopoly?

(b) What profit will PECO make at this equilibrium?

(c) What would be the efficient quantity Q_E, and what is the deadweight loss generated by the profit-maximizing monopoly?

(d) Suppose that Mayor Kenney decides to impose Marginal Cost Pricing on PECO and subsidize it for potential losses. What are the new equilibrium price and quantity? If a lump-sum subsidy (S) is needed, what is it? Explain.

(e) Mayor Kenney is also considering letting PECO maximize its profit, while giving the firm a per-unit subsidy. What is the per-unit subsidy s needed to reach the efficient output Q_E? Show your work.