15. E  
16. D  
17. D  
18. C  
19. B  
20. A  
21. C  
22. C  
23. A  
24. B  
25. A (Key: short-run ED is lower, i.e. less elastic and more inelastic)  
26. D  
27. D (Key: The “supply-siders” assumed workers would respond greatly to the tax cuts. i.e. They would respond greatly to an increase in take-home wages.)
Answers to Problems From Old Exams

1. This question involves a good bit of thinking.
   - First, of all, what is the elasticity of demand for labor? \( E_D = \frac{\% \Delta Q_d}{\% \Delta P} \). The demand for labor comes from firms wanting to hire labor. Therefore, the \( \% \Delta Q_d \) of labor is the percentage change in the number of workers firms want to hire. The price of labor is the wage firms have to pay to hire someone. Therefore, the \( \% \Delta P \) is percentage change in wages. One could re-write the elasticity of demand for labor as follows: \( E_{D, labor} = \frac{\% \text{workers hired}}{\% \text{wages}} \).
   - Raising the minimum wage will raise wages for some jobs. The question is; “Do you want firms to greatly change the number of workers they hire in response, or to be relatively unresponsive to the change in wages?” Higher wages cause firms to hire fewer workers. (The minimum wage is a price floor and will cause fewer workers to be hired.) This is the drawback of the minimum wage and the reason most economists oppose it. You want this drawback to be as small as possible.
   - As the labor union president, you want as little unemployment as possible. Therefore, you want firms to be relatively unresponsive to an increase in the wage. This way when it is artificially raised for some workers, firms will not greatly cut back on the number of workers they hire. St. Twosburg is the best city in which to implement the minimum wage. The minimum wage will cause firms to hire fewer workers in St. Twosburg. However, if you implemented the minimum wage in Onengrad its greater elasticity of demand for labor would result in an even greater loss of jobs.

2. **Which good is the most elastic?**

<table>
<thead>
<tr>
<th>Good</th>
<th>Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Del Monte green beans</td>
<td>There are more substitutes for a particular brand of green beans than there are for all green beans.</td>
</tr>
<tr>
<td>b. Breakfast cereal</td>
<td>Breakfast cereal is a larger part of the consumer’s budget. Therefore, consumers will be more responsive to changes in its price.</td>
</tr>
<tr>
<td>c. Heating oil in the long-run</td>
<td>In the long-run, one has more time to adapt to a change in price allowing one to be more responsive. Given enough time, those using heating oil can insulate and switch to other forms of heat.</td>
</tr>
<tr>
<td>d. Cable TV</td>
<td>Cable TV is a larger part of the consumer’s budget. Therefore, consumers will be more responsive to changes in its price.</td>
</tr>
<tr>
<td>e. Vitamin pills</td>
<td>Vitamin pills are less of a necessity (and more of a luxury). Also, it is easier to substitute for vitamin pills (simply eating better) than it is for insulin.</td>
</tr>
<tr>
<td>f. Medical care over a ten-year period.</td>
<td>In the long-run, one has more time to adapt to a change in price allowing one to be more responsive.</td>
</tr>
</tbody>
</table>

3. False

4. I won’t give you this answer in its entirety. I will give you this hint, however. All the goods are generating $200,000 in revenues (before the tax) so there is no difference there. Answers based solely on difference in prices and quantities sold (before the tax) are not correct.

5. – 12. You are on your own here.

13. E

14. C
21. Now assume that corn producers in Cob county Iowa, and only in Cob county Iowa, cut back production by 20%, what will happen to their (Cob county Iowa corn producers) total revenues?
   a. increase  
   b. remain unchanged  
   c. decrease  
   d. it cannot be determined with the above data

22. If a good is a luxury, its (own) price elasticity of demand will tend to be:
   a. 0  
   b. greater than 0, but less than 1  
   c. greater than 1  
   d. (asymptotically approaching) infinity

23. Finally, after 4 years of hard work you have graduated college and have been hired by a minor league baseball team. Your boss asks; “Our costs don’t change regardless of how many people we let in the stadium. Our revenues do however. Right now, we are charging $10 a ticket and selling 4,000 tickets per game. The price elasticity of demand, at $10, is estimated to be 1.52. What should we do to increase our revenues?” Answer your boss correctly.
   a. lower the price you charge for tickets  
   b. leave ticket prices unchanged  
   c. raise the price you charge for tickets  
   d. information on quantity demanded at other prices is needed to answer this

24. Gwendeline buys $2 worth of orange juice and $50 worth of dinner at restaurants per week. Both of them have, in her mind, the exact same number and availability of substitutes. Both, in her mind, are exactly halfway between a luxury and a necessity. For which good is Gendeline likely to have a higher (own) price elasticity of demand?
   a. orange juice  
   b. dinner at restaurants  
   c. both should have the same ED

25. You and your friend, Crafty Chris, have managed to corner the world market on DD-245-T, one of the world’s best herbicides (weed killers)? You are discussing reducing your supply in order to drive up price and greatly increase your total revenues. Chris, is running from the law and is only concerned with the short-run. You, however, are more concerned with the long-run. Who is more likely to favor reducing your supply?
   a. Chris  
   b. you

26. One of the main determinants of the (own) price elasticity of supply is:
   a. whether buyers consider the item a luxury or necessity.  
   b. the number of close substitutes buyers have for the item.  
   c. the size of the item in the buyer’s budget.  
   d. the time period involved.  
   e. all of the above.

27. In the 1980’s, Ronald Reagan and the “supply-siders” argued that cutting income tax rates a relatively small amount would greatly increase the amount people work and produce. Reagan and the supply-siders were implicitly assuming:
   a. the (own) price elasticity of supply for labor was highly negative (ex. –2.5).  
   b. the (own) price elasticity of supply for labor was between –1 and 0.  
   c. the (own) price elasticity of supply for labor was between 0 and 1.  
   d. the (own) price elasticity of supply for labor was greater than 1.  
   e. none of the above (it was all about sensitivity to wages, not ES).
16. Twenty years from now you are a famous archeologist attempting to decipher some Kushite writing. So far you have deciphered the following: “Price of \( \mathcal{M} \) falls! Demand for \( \mathcal{O} \) is certain to increase!” What can you tell about \( \mathcal{M} \) and \( \mathcal{O} \)? Assume the Kushites knew all about economics. Cool, but this is more specific than we’ll have on our (Fall 2006) exam 2.

a. Demand for \( \mathcal{M} \) is elastic. \( \mathcal{O} \) ’s elasticity of demand cannot be determined.
b. Demand for \( \mathcal{O} \) is elastic. \( \mathcal{M} \) ’s elasticity of demand cannot be determined.
c. \( \mathcal{M} \) and \( \mathcal{O} \) are buyers’ substitutes.
d. \( \mathcal{M} \) and \( \mathcal{O} \) are buyers’ complements.

17. Ten years from now you receive a call from an archeologist friend of yours. She is attempting to decipher the writings of the ancient Olmecs. Apparently, Olmec society knew a heck of a lot about economics. So far she deciphered the following: “Cross-Price elasticity of demand between \( \mathcal{P} \) and \( \mathcal{I} \) is \(-0.6\).” What can you tell about \( \mathcal{P} \) and \( \mathcal{I} \)? Cool, but this is more specific than we’ll have on our (Fall 2006) exam 2.

a. If \( \mathcal{P} \) ’s own price elasticity of demand is positive, \( \mathcal{I} \) ’s must be negative & vice versa.
b. Both \( \mathcal{P} \) ’s and \( \mathcal{I} \) ’s own price elasticity of demand must be less than 1.
c. \( \mathcal{P} \) and \( \mathcal{I} \) are buyers’ substitutes.
d. \( \mathcal{P} \) and \( \mathcal{I} \) are buyers’ complements.
e. Both \( \mathcal{P} \) and \( \mathcal{I} \) are inferior goods.

18. Dang those ancient Olmecs sure were into economics! Your archeologist friend has a writing she is working on. So far she has deciphered the following: “Income elasticity of demand for \( \mathcal{C} \) is \(-1.5\).” What can you tell about \( \mathcal{C} \)? Cool, but this is more specific than we’ll have on our (Fall 2006) exam 2.

a. \( \mathcal{C} \) has very few buyers’ substitutes.
b. \( \mathcal{C} \) has very few buyers’ complements.
c. \( \mathcal{C} \) is an inferior good.
d. \( \mathcal{C} \) is a normal good, but probably not a luxury good.
e. \( \mathcal{C} \) is most likely a luxury good (also a normal good).

19. Your employer, Ortho, has asked you to estimate the world’s (own) price elasticity of demand for malathion, a common insecticide. You measured the price in U.S. dollars and the quantity in gallons. You estimate that \( E_{DMalathion} = 0.85 \). At the last minute you that his employer prefers to measure the price in British pounds (\( £ \)) and the quantity in liters. (1 £ \( \cong \$0.70 \), 1 liter \( \cong 0.26 \) gallons) What will the elasticity of demand measure be when you use British Pounds (\( £ \)) and liters to calculate it instead of U.S. dollars and gallons?

a. \( E_{DMalathion} < 0.85 \)
b. \( E_{DMalathion} = 0.85 \).
c. \( E_{DMalathion} > 0.85 \)
d. The answer will vary depending on the relative elasticity of supply in the market for Malathion.

20. Assume the (own) price elasticity of demand for all corn is 0.52. If all corn producers, worldwide, cut back production by 10%, what will happen to their total revenues?

a. increase  
b. remain unchanged  
c. decrease  
d. it cannot be determined with the above data
you that $750,000 spent on a campaign in one city is enough to get the minimum wage law passed in that city, but just barely. i.e. You need to pick the one city you most want the see the minimum wage law. These cities are identical except for their elasticity of demand for labor. What city will you pick?

a. Alphagrad, $E_{DLabor} = 0.50$

b. Bravostan, $E_{DLabor} = 0.75$

c. Charlovia, $E_{DLabor} = 1.00$

d. Deltatown, $E_{DLabor} = 1.25$

e. Echostan, $E_{DLabor} = 1.50$

13. In which of the above (i.e. from # 12) cities is the demand for labor the most elastic?

14. You are driving home for Christmas. Distracted by lovely Christmas songs on the radio, you fail to notice your gas gauge is very near empty. You see a sign that says; “Gas station this exit. Next service 54 miles”. Which of the following most likely describes your demand for gasoline at this station?

a. elastic

b. proportional

c. inelastic

d. dis-proportional

e. unit elastic

15. You visit a psychic to learn your future. She tells you that in chapter 14 of your text, you will see a demand curve that is completely horizontal. Which of the following best describe this demand curve?

a. unit elastic

b. non-functional

c. collapsed

d. perfectly inelastic

e. perfectly elastic
6. Which of the following best describes the demand for Air Greenspan shoes?
   a. elastic  b. proportional
   c. inelastic  d. dis-proportional
   e. unit elastic

7. What is the price elasticity of demand for Pareto Optimus shoes?
   a. 0.5  b. 1  c. 1.5
   d. 2  e. none of the above

8. Which of the following best describes the demand for Pareto Optimus shoes?
   a. elastic  b. proportional
   c. inelastic  d. dis-proportional
   e. unit elastic

9. What is the price elasticity of demand for Hicksian Compensator shoes?
   a. 0.5  b. 1  c. 1.5
   d. 2  e. none of the above

10. Which of the following best describes the demand for Hicksian Compensator shoes?
    a. elastic  b. proportional
    c. inelastic  d. dis-proportional
    e. unit elastic

11. At right you have a lovely (yes lovely) demand curve for Choco-Popcicles. Which of the following is true?
    a. Price elasticity of demand is constant and unit elastic along the entire demand curve.
    b. Price elasticity of demand is constant and elastic along the entire demand curve.
    c. Price elasticity of demand is constant and inelastic along the entire demand curve.
    d. Price elasticity of demand varies as one moves up or down the demand curve.
    e. Price elasticity of demand, at any point, will be different if one measures quantity in ounces rather than pounds.

12. You are a Workers’ Party leader in the Republic of Elastistan. Your goal in life is to make average low-income earners better off. Five cities are holding referendums on passing a local minimum wage law. Surveys show that unless something is changed, all five measures will fail (i.e. no minimum wage anywhere). Your party has $750,000 to contribute to minimum wage campaigns. Experts tell
Other Problems

1. You are a labor union president in the Republic of Elastistan. Your goals are twofold: 1) to get high wages for workers, and 2) to minimize unemployment among workers (i.e. to have as many jobs for your workers as possible). Two cities are having elections to decide whether or not to impose a minimum wage. Your union has $150,000 to contribute to one of these campaigns. Experts tell you that $150,000 spent in one city is enough to get the minimum wage law passed in that city. However, it is not enough to get the law passed in both cities. i.e. You need to pick the one city you most want the see the minimum wage law. These cities are identical except for their elasticity of demand for labor. Which city will you pick? Why?

<table>
<thead>
<tr>
<th>City</th>
<th>E&lt;sub&gt;DLabor&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onengrad</td>
<td>1.71</td>
</tr>
<tr>
<td>St. Twosburg</td>
<td>0.71</td>
</tr>
</tbody>
</table>

2. For each pair, which good or service would have the most elastic demand? Why?
   a. Del Monte green beans or all green beans
   b. pepper or breakfast cereal
   c. heating oil in the short-run or heating oil in the long-run
   d. toothpicks or cable TV
   e. insulin or vitamin pills
   f. medical care over a 1 year period or medical care over a ten year period

3. Indicate whether the following are True or False.
   ________ A good’s elasticity of demand will be constant if the good’s demand curve is linear.

4. Assume you head a local tax advisory board. You are considering a 10% sales tax on one of four goods, licorice, limes, leather, and lace. You are given the information in the table below. (Assume that the elasticities of supply are the same for all four goods.)

<table>
<thead>
<tr>
<th>Good</th>
<th>Price (before tax)</th>
<th>Qty sold (before tax)</th>
<th>E&lt;sub&gt;D&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Licorice</td>
<td>$2.00/bag</td>
<td>100,000 bags</td>
<td>2.73</td>
</tr>
<tr>
<td>Limes</td>
<td>$2.00/lb</td>
<td>100,000 lbs.</td>
<td>1.67</td>
</tr>
<tr>
<td>Leather</td>
<td>$2.00/ft²</td>
<td>100,000 ft²</td>
<td>0.37</td>
</tr>
<tr>
<td>Lace</td>
<td>$2.00/sheet</td>
<td>100,000 sheets</td>
<td>0.91</td>
</tr>
</tbody>
</table>

- If your sole goal is to generate as much tax revenue as possible from the 10% sales tax, which one good should you tax? Only choose one good.
- Explain why.

5. What is the price elasticity of demand for Air Greenspan shoes?
   a. 0.5  
   b. 1  
   c. 1.5  
   d. 2  
   e. none of the above

#’s 5 –6: If Nike raises the price of their Air Greenspan shoes from $45 to $55, their analysts estimate the quantity they can sell will fall from 300,000 per month to 200,000 per month.
Chapter 5 Review

Readings  Chapter 5, all … but don’t sweat the details on Cross Elasticity of Demand, Income Elasticity of Demand, and Elasticity of Supply.

Outline

I.  What is Elasticity?  Why do we care?
II.  (Own) Price Elasticity of Demand (ED)?
III. Classifying (ED)
    A. Elastic or Inelastic?
        1. elastic: buyers are relatively responsive to ΔP
        2. inelastic: buyers are relatively unresponsive to ΔP
    B. Extremes of elasticity  (ED = 0,  ED = ∞)
IV. Measuring (ED)  …. Handout
    A. Definition/formula
    B. Midpoints formula
V. (ED) and Total Revenues … Handout
    A. What’s Total Revenues (TR)?
    B. Changing price when demand is elastic
    C. Changing price when demand is inelastic
VI. What Determines (ED)?
VII. Cross Elasticity of Demand (E_{XY})
    A. Definition
    B. E_{XY} and substitutes  … Don’t sweat this too much for exam 2.
    C. E_{XY} and compliments  … Don’t sweat this too much for exam 2.
VIII. Income Elasticity of Demand (E_i)
    A. Definition
    B. E_{i} and normal goods  … Don’t sweat this too much for exam 2.
    C. E_{i} and inferior goods  … Don’t sweat this too much for exam 2.
IX. Elasticity of Supply (ES)
    A. Definition
    B. Time period and E_S

Text and Study Guide Questions

Questions for Review
all

Problems and Applications
all