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True / False

1. According to the Coase theorem, the private market will need government intervention in order to reach an efficient outcome.
   a. True
   b. False

2. Internalizing a negative externality will cause the market supply curve to shift to the left.
   a. True
   b. False

3. The more inelastic the demand and supply curves, the greater the deadweight loss of a tax.
   a. True
   b. False

4. For any given quantity, the price on a demand curve represents the marginal buyer's willingness to pay.
   a. True
   b. False

5. If a price ceiling of $2 per litre is imposed on gasoline, but the market equilibrium price is $1.50, the price ceiling is a binding constraint on the market.
   a. True
   b. False

Multiple Choice

6. Assume that the supply of gasoline is relatively inelastic and the supply of wheat is relatively elastic. What happens to the producer surplus if a tax is levied on gasoline?
   a. The loss of producer surplus is relatively large for the supply of gasoline.
   b. The loss of producer surplus is relatively small for the supply of gasoline.
   c. The gain of producer surplus is relatively large for the supply of gasoline.
   d. The gain of producer surplus is relatively small for the supply of gasoline.

7. What characteristics do public goods and common resources have in common?
   a. Both goods are nonexcludable.
   b. Both goods are excludable.
   c. Both goods are rival in consumption.
   d. Both goods are nonrival in consumption.

8. Why does the Tragedy of the Commons occur?
   a. A common resource is rival in consumption.
   b. A common resource is underutilized.
   c. Crimes are committed in public places.
   d. Common resources are subject to exclusionary rules.

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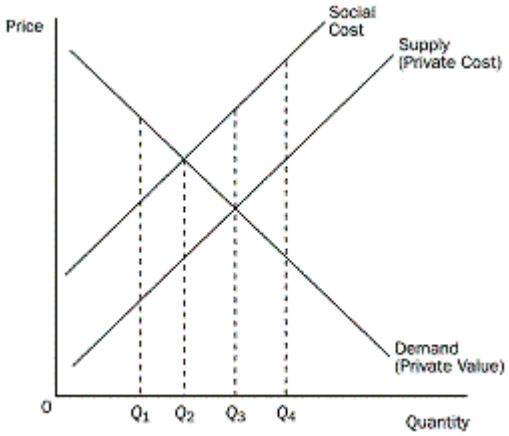
Figure 10-2



9. Refer to Figure 10-2. What is this market experiencing?
   a. government intervention
   b. a positive externality
   c. a negative externality
   d. social equilibrium

10. Refer to Figure 10-2. If this market currently produces Q_3, how would total economic well-being be increased?
   a. if production decreased to Q_2
   b. if production increased to Q_4
   c. if production decreased to Q_1
   d. if production decreased to *0*

11. When a tax is levied on a good, which of quantity sold and price will change?
   a. The quantity of the good sold will decrease but the price of the good sold will not change.
   b. The price of the good sold will increase but the quantity of the good sold will not change.
   c. The quantity of the good sold will decrease but the price of the good sold will increase.
   d. The price of the good sold will decrease but the quantity of the good sold will increase.

12. What effect does a tax levied on the buyers of a product have?
   a. It shifts the supply curve upward (or to the left).
   b. It shifts the supply curve downward (or to the right).
   c. It shifts the demand curve downward (or to the left).
   d. It shifts the demand curve upward (or to the right).

13. How is tax burden related to the elasticity of the market?
   a. A tax burden falls most heavily on the side of the market that is elastic.
   b. A tax burden falls most heavily on the side of the market that is inelastic.
   c. A tax burden falls most heavily on the side of the market that is closer to unit elastic.
   d. A tax burden is distributed independently of relative elasticities of supply and demand.

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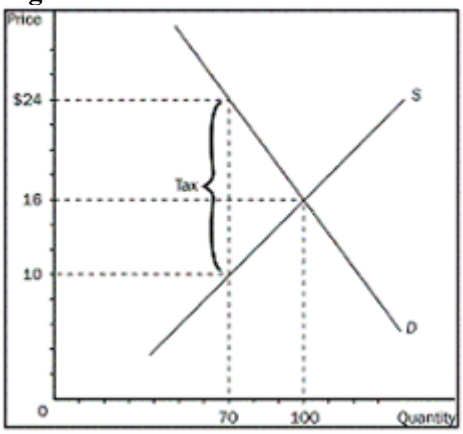
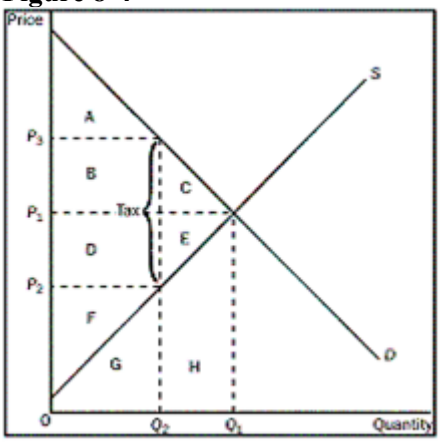
Figure 8-3



14. Refer to Figure 8-3. What is the per-unit burden of the tax on buyers?
    a. $6
    b. $8
    c. $14
    d. $16

Figure 8-4



15. Refer to Figure 8-4. Which area represents producer surplus after the tax is levied on the consumer?
    a. A
    b. A + B + C
    c. D + E
    d. F

16. Refer to Figure 8-4. Which area represents the loss in total welfare resulting from the levying of the tax on the buyer?
    a. A + B + C
    b. D + E + F
    c. A + B + D + F
    d. C + E

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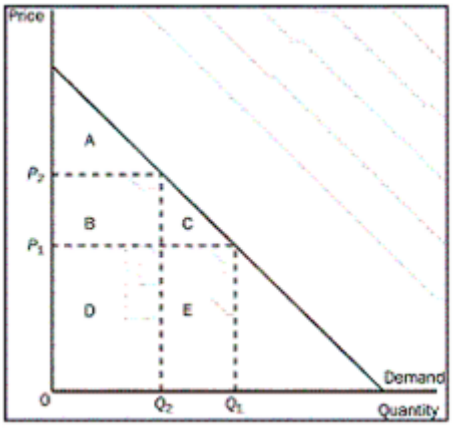
17. What happens as elasticities of supply and demand increase?
    a. the smaller the deadweight loss from a tax
    b. the less intrusive a tax will be on a market
    c. the greater the deadweight loss from a tax
    d. the more equitable the distribution of a tax between buyers and sellers

18. Market demand is given as $Q^D = 200 - 3P$. Market supply is given as $Q^S = 2P + 100$. In a perfectly competitive equilibrium, what will be the value of consumer surplus?
    a. $1400
    b. $2800
    c. $3267
    d. $6538

Figure 7-1



19. Refer to Figure 7-1. When the price rises from P_1 to P_2, what happens to consumer surplus?
    a. It increases by an amount equal to A.
    b. It decreases by an amount equal to B + C.
    c. It increases by an amount equal to B + C.
    d. It decreases by an amount equal to C.

20. What does a binding price ceiling cause?
    a. a shortage that cannot be eliminated through market adjustment
    b. a surplus that cannot be eliminated through market adjustment
    c. a shortage that is temporary, since market adjustment will cause price to rise
    d. a surplus that is temporary, since market adjustment will cause price to rise

Subjective Short Answer

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21. Consider a perfectly competitive labour market, Labour Demand is given by $L^D = 150 – 5W$, and Labour Supply is given by $L^S = 10W$, where W is the market wage rate.

a. Solve for the market equilibrium wage and level of employment in the market.
b. In order to stimulate employment in this industry, the government offers workers an additional $3 for each unit of labour worked. Find the new market equilibrium.
c. In this case, what is the welfare gain in the labour market?

22. The Credit River has two polluting firms on its banks. Plants A and B each dump 100 tonnes of effluent into the river each year. The cost per tonne of reducing emissions is $20 for plant A and $100 for Plant B. The government wants to reduce overall pollution from 200 tonnes to 50 tonnes.

a. If the government knew the cost of reduction for each firm, what reductions would it impose in order to achieve its overall goal at the least possible total cost? What would be the cost to each firm, and the total cost?

b. If, in the absence of information about each firm's costs, the government decided to reach its overall goal by imposing uniform reductions on the firms, what would be the cost to each firm, and the total cost?

c. Compare the total costs in parts a and b. If the government does not know the cost of pollution reduction for each firm, is there still some way to reduce pollution to 50 tonnes at the total cost calculated in part a?

23. Using the equations shown below, answer the following questions.

$Q^D = 100 – 2P$
$Q^S = –20 + 2P$

a. What is the equilibrium price and quantity in this market?
b. Assuming a tax of $10 is imposed on the seller side, what is the equilibrium price and quantity after the tax?
c. How much of the tax will the buyers pay?
d. How much of the tax will the sellers pay?
e. What is the effective price the sellers receive?

24. Using a supply and demand diagram, demonstrate how a positive externality leads to market inefficiency. How might the government help to eliminate this inefficiency?

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Answer Key

1. False

2. True

3. False

4. True

5. False

6. a

7. a

8. a

9. c

10. a

11. c

12. c

13. b

14. b

15. d

16. d

17. c

18. c

19. b

20. a

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21.

a. To find the equilibrium, set labour supply = labour demand in order to obtain W = 10 and $L^D = L^S = 100$.

b. This would have the effect of shifting the labour supply curve down and to the right by \$3. The original $L^S = 10W$, so solve for W in order to obtain $L^S/10$. At each possible employment level, workers are willing to work for \$3 less per hour because they are receiving the subsidy. The equation for labour supply becomes $W = -3 + L^S/10$. Set this labour supply function equal to the labour demand function and solve the system. The equilibrium wage is now \$8, but once workers collect their \$3 bonus from the government, their take-home wage becomes \$11. The equilibrium level of employment is 110.

c. Notice that, comparing a) and b), firms and workers shared the benefits of the subsidy. Workers gain \$1 for each unit of labour worked and firms gain \$2. The overall employment also increased by 10 units. The welfare gain from this policy is 1/2*\$3*10 = 15.

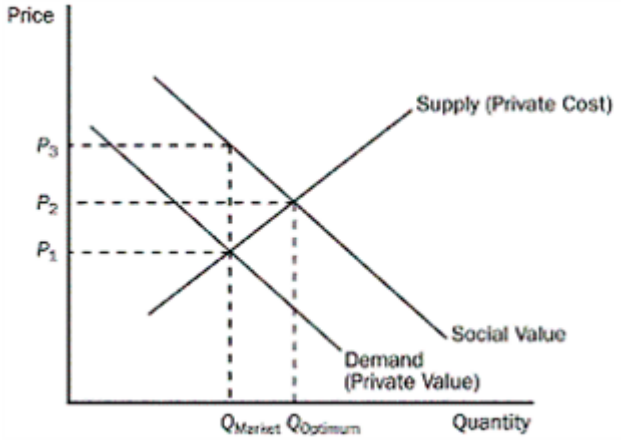
22. a. If the government knew the cost of reduction at each firm, it would have plant A eliminate all its pollution (at a cost of \$20 per ton times 100 tonnes = \$2000) and have plant B eliminate half of its pollution (at a cost of \$100 per tonne times 50 tonnes = \$5000). This minimizes the total cost (\$7000) of reducing the remaining pollution to 50 tonnes.

b. If each firm had to reduce pollution to 25 tonnes (so each had to reduce pollution by 75 tonnes), the cost to plant A would be 75 × \$20 = \$1500 and the cost to Plant B would be 75 × \$100 = \$7500. The total cost would be \$9000.

c. In part a, it costs \$7000 to reduce total pollution to 50 tonnes, but in part b it costs \$9000. So it is definitely less costly to have Plant A reduce all of its pollution and have Plant B cut its pollution in half. Even without knowing the costs of pollution reduction, the government could achieve the same result by auctioning off pollution permits that would allow only 50 tonnes of pollution. This would ensure that plant A reduced its pollution to zero (because Plant B would outbid it for the permits) and Plant B would then reduce its pollution to 50 tonnes.

23. a. Equilibrium price is \$30 and equilibrium quantity is 40 units.
b. Equilibrium price is \$35 and equilibrium quantity is 30 units.
c. Buyers will pay \$5.
d. Sellers will pay \$5.
e. Sellers will receive \$25.

24.



A positive externality leads the market to exchange a smaller quantity than is socially desirable. The government could help eliminate this inefficiency by subsidizing the product.

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