PARTIAL ANSWER KEY, ASSIGNMENT 2: Covers Chapters 7-11. Topics: *Consumers, producers and the efficiency of the markets, the costs of taxation, applications of the theories of trade, externalities, and lastly, public goods and common resources.*

SECTION 1: Multiple Choice (20 marks). Answer all questions.

Identify the choice that best completes the statement or answers the question.

. --d---1.

___d 3.

___a 5.

___c_ 7.

___c_ 9.

___d_ 11.

___d_ 13.

__ c__15.

___d_ 17.

___b_ 19.

SECTION 2: SHORT FREE-RESPONSE QUESTIONS.

2. ANS:
Prior to the tax, the equilibrium price would be $60 and the equilibrium quantity would be 280. After the tax is imposed, *P*, the price received by sellers, would be $57. The price paid by buyers would be $72. The quantity sold would be 271. The new answer shows three obvious facts. First, buyers pay more with a tax and second, sellers receive less with a tax. The third thing is that the size of the market shrinks when a tax is imposed on a product.

4a. ANS:
One solution would be to have the farmer also own the beehives. This internalizes the externality. Another solution would be to have the farmer compensate the owner of the beehives for the value of the pollination. On the other hand, the owner of the beehives prospers by locating her hives next to the farmer's fields. She should be willing to compensate the farmer for this benefit.

4b. ANS.
According to the Coase theorem, you and your roommate will bargain over whether your roommate will smoke in the house. If you value clean air more than your roommate values smoking, the bargaining process will lead to your roommate not smoking. But if your roommate values smoking more than you value clean air, the bargaining process will lead to your roommate smoking. The outcome is efficient as long as transaction costs do not prevent an agreement from taking place. The solution may be reached by one of you paying off the other either not to smoke or for the right to smoke.

6. ANS:

		Rival in consumption?	
		Yes	No
Excludable?	Yes	Private Goods • congested toll roads	Club Goods • fire protection • cable TV
	No	Common Resources • fish in the ocean • the environment • congested nontoll roads	Public Goods • national defence • knowledge

SECTION 3: LONGER FREE RESPONSE QUESTIONS. TOTAL MARKS: 40

ANSWER ANY TWO OF THE QUESTIONS 2 AND 3:

QUESTION 2 (20 marks).

ANS. QUESTION 2

1. a. Figure 3 illustrates the market for pizza. The equilibrium price is P_1, the equilibrium quantity is Q_1, consumer surplus is area A + B + C, and producer surplus is area D + E + F. There is no deadweight loss, as all the potential gains from trade are realized; total surplus is the entire area between the demand and supply curves: A + B + C + D + E + F.

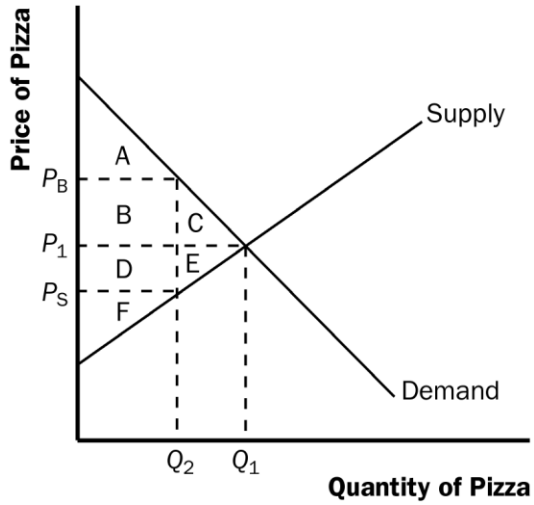

Figure 3

b. With a $1 tax on each pizza sold, the price paid by buyers, P_B, is now higher than the price received by sellers, P_S, where $P_B = P_S + \$1$. The quantity declines to Q_2, consumer surplus is area A, producer surplus is area F, government revenue is area B + D, and deadweight loss is area C + E. Consumer surplus declines by B + C, producer surplus declines by D + E, government revenue increases by B + D, and deadweight loss increases by C + E.

c. If the tax were removed and consumers and producers voluntarily transferred B + D to the government to make up for the lost tax revenue, then everyone would be better off than with the tax. The equilibrium quantity would be Q_1, as in the case without the tax, and the equilibrium price would be P_1. Consumer surplus would be A + C, because consumers get

surplus of A + B + C, and then voluntarily transfer B to the government. Producer surplus would be E + F, since producers get surplus of D + E + F, and then voluntarily transfer D to the government. Both consumers and producers are better off than the case when the tax was imposed. If consumers and producers gave a little bit more than B + D to the government, then all three parties, including the government, would be better off. This illustrates the inefficiency of taxation.

ANSWER QUESTION 2.2

a. The deadweight loss from a tax on heating oil is likely to be greater in the fifth year after it is imposed rather than the first year. In the first year, the elasticity of demand is fairly low, as people who own oil heaters are not likely to get rid of them right away. But over time, they may switch to other energy sources, and people buying new heaters for their homes will more likely choose gas or electric, so the tax will have a greater impact on quantity.

b. The tax revenue is likely to be higher in the first year after it is imposed than in the fifth year. In the first year, demand is more inelastic, so the quantity does not decline as much and tax revenue is relatively high. As time passes and more people substitute away from oil, the equilibrium quantity declines, as does tax revenue.