Final Review Practice Problems

These questions come from multiple finals and do not represent a complete test. Also review midterm practice problems, homework, and midterm problems.

**Consumer theory**

1. The market for beer is represented by the following demand and supply functions, where Q is barrels of beer and Y is income:

   \[ Q_d = 200 - 4P_d + 0.1Y \]
   \[ Q_s = -50 + 6P_s \]

   a. Is beer a normal or an inferior good? Explain.
   b. If income is $500, what will be the equilibrium price and quantity?
   c. A $10 tax per barrel is introduced. What will be the effect on the supply price, the demand price and the traded quantity?
   d. Use a diagram to illustrate the effects of the tax on consumer surplus, producer surplus, and taxpayers. Indicate any deadweight losses.

2. Jane Austin has a fixed income each month and cannot borrow or save. In May, Jane buys 4 crumpets and 6 cucumber sandwiches. She pays six farthings for each crumpet and 1 farthing for each sandwich.

   a. Draw a graph of her budget constraint, labeling the INTERCEPTS and SLOPE carefully. Draw an indifference curve through her optimal choice.
   b. Alastair buys both crumpets and cucumber sandwiches at the same store as Jane. However, he likes crumpets more and buys 7 crumpets but only 1 sandwich. How does the size of his marginal rate of substitution (his marginal value of crumpets in terms of cucumber sandwiches) compare to Jane’s?

3. Sandra’s consumption of bread fell last year. Which of the following are potential explanations? (More than one answer may be correct.)

   c. The price of bread rose and Sandra’s demand for bread is elastic.
   d. The price of bread rose and Sandra’s demand for bread is inelastic.
   e. Sandra’s income fell and bread is a normal good.
   f. Sandra’s income fell and bread is an inferior good.
   g. The price of cheese rose and cheese and bread are complements for Sandra.
   h. The price of cheese rose and cheese and bread are substitutes for Sandra.

*The answers are c, d, e, and g. Why both c and d? Because demand elasticities are negative—when the price rises, demand falls. The question is HOW negative—a price elasticity with an absolute value of less than 1 represents inelastic demand. For example, if the price elasticity is -1/2, a one percent increase in the price of bread leads*
to a half percent decrease in the quantity demanded. On the other hand, a price elasticity with an absolute value greater than 1 represents elastic demand. For example, if the price elasticity is -3, a one percent increase in the price of bread leads to a three percent decrease in the quantity demanded. In either case, demand will fall. See the handouts posted on the website under consumer theory for more details on elasticites.

**Producer theory**

4. You own a firm in a competitive industry, where all firms are identical. Other firms may enter and exit, and the cost functions for firms in the industry will not change. The government is considering one of two policies:
   A: A tax of $500 per firm per year for all firms in the industry.
   B: A tax of $1000 per firm per year for all firms except yours

   Which policy will you prefer? Consider only the long run effects. Explain your answer.

5. A firm is currently producing 600 units of output using 150 hours of labor and 50 hours of capital. The marginal product of labor is 10 units of output per hour, the marginal product of capital is 30 units of output per hour. If the wage rate for labor is $5 per hour and the rental rate for capital is $10 per hour then
   a. the firm’s use of labor and capital is cost efficient
   b. the firm can produce more output for the same total cost by using more labor and more capital
   c. the firm can produce more output for the same total cost by using more labor and less capital
   d. the firm can produce more output for the same total cost by using less labor and more capital

6. Dr. Aspen is a doctor who has identical costs to all other doctors in town. Like all other doctors, she has 500 appointments a year, and she charges patients $100 for each. Assume that doctors are free to exit the profession and that a large group of similar doctors could also move to town and enter the profession. Entry or exit would not change the cost functions of any doctor (Constant cost industry). Assume all of the usual assumptions about shapes of cost curves apply.
   e. Medical malpractice rates are increasing next year to $10,000 a year for all doctors. How will this affect the price Dr. Aspen charges and the number of patients that she sees in the long run?
   f. Instead of (a), assume that Dr. Aspen just lost a medical malpractice case and must pay $10,000 in damages every year, regardless of whether or not she stays in business. Assume that malpractice insurance rates do not change for
her or for any other doctor. How will this affect the price she charges and the number of patients that she sees in the long run?

**Equilibrium**

7. You turn on the radio and hear about new government policy in the gasoline market. Unfortunately, you were too late to find out what the policy is. You do hear that there are reports of long lines at the pump and of drivers bribing convenience store owners to get gasoline. Your friend tells you that the problems must be that the government has limited the quantity of gasoline that may be sold. Is your friend right? If not, what do you think the new policy might be?

8. Which of the following are potential results of a price floor for wages? (More than one answer may be correct.)
   g. Shortages in the labor market, with firms engaging in costly search activities and head-hunting.
   h. Unemployment in the labor market, with potential workers competing engaging in costly search activities.
   i. Firm discrimination on the basis of characteristics like personal connections or appearance.
   j. A deadweight loss.
   k. A reduction in producer surplus
   l. An increase in producer surplus

9. Suppose demand for apples is represented by \[ Q_D = 40 - 2P \]
    Supply of apples is represented by \[ Q_S = 2P + 20 \]

   What is the equilibrium price and quantity?

   Suppose the government imposes a $1 tax on apple suppliers. What is the new price to consumers, price to suppliers, and quantity traded? How large is the deadweight loss imposed by this tax?

**Market failures: monopolies**

10. The XYZ firm is the only producer of TVs in the country of Slovonia. It faces the following demand and cost schedules:

<table>
<thead>
<tr>
<th>Q</th>
<th>P</th>
<th>Total Costs</th>
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<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>100</td>
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<td>2</td>
<td>80</td>
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<td>3</td>
<td>60</td>
<td>50</td>
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<tr>
<td>4</td>
<td>40</td>
<td>100</td>
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</tbody>
</table>
a. How many TVs should XYZ produce and at what price? Explain.

b. The Slovonian government opens the TV market up to competition from other firms in other countries. XYZ is now a price taker, and faces a world price of $40. What quantity should XYZ produce now?

11. Explain the flaws in the following statement: “A monopolist will generally choose to produce the quantity of output where average costs are the lowest. This way the firm gets the highest markup possible: the difference between the price and the average cost is the largest. This will maximize the profits for the firm.”

Market failures: Externalities

12. Is the following statement true or false? Explain. Monopoly price creates a deadweight loss. If a monopoly produces a good with negative externalities, the combination will be one problem added to another: the generic deadweight loss of monopoly pricing will be added to the generic deadweight loss of negative externalities.

13. What is wrong with this statement? “The government is talking about taxing the consumption of goods that produce negative externalities like pollution and then cutting other taxes. This way the government will not change the total amount of tax revenue raised. That is goofy political mumbo-jumbo. If you cut taxes on other goods, everything just washes out, with no real gains to the economy.”

Questions 12 and 13 are both related. Draw a graph where there are negative externalities and find the deadweight loss. Why is there a deadweight loss? Because the private quantity is TOO MUCH—the market will not take into account the external costs and so at the quantity produced, the marginal costs to society exceed the marginal benefits.

Why is there normally a deadweight loss when there is a monopolist or a tax? (Draw those graphs!) Because the quantities produced are usually TOO LITTLE. In this case, having a monopolist produce the good with externalities will help to counterbalance the overproduction. 12 is FALSE—the two forces opposed each other, rather than creating a larger deadweight loss—the monopolist produces less than the competitive market—and that’s good, because the competitive market was producing too much. Ditto on the tax—see the graphs in class with a tax on a negative externality to see how a tax can eliminate the deadweight loss—that is a real gain to the economy. At the same time, in Q13, taxes are reduced in markets where they were leading to deadweight losses. Some people refer to the proposal in Q13 as the double dividend hypothesis—deadweight losses are eliminated in the
formerly taxed market and in the externalities market by shifting the tax from one market to the other.

14. In Apria, a widget factory is located upriver from a fish hatchery. Production of widgets results in waste that is dumped in the river. In the absence of any pollution controls, each widget produced would result in $50 in damages to the fish hatchery. The factory currently produces 1000 widgets. In Apria, the factory has the legal right to dump pollutants into the river.

In Babria, there is an identical widget and hatchery. However, in Babria, the hatchery has a legal right to compensation for polluted water.

Pollution scrubbing equipment can eliminate all pollution. The cost of that equipment is $20,000 in either country.

What outcome is the most likely?
a. The level of pollution will be higher in Babria than in Apria.
b. The level of pollution will be the same in Babria than in Apria.
c. The level of pollution will be higher in Apria than in Babria.
d. More information is needed to compare the pollution levels in the two countries.