Name: **KEY**
ECON 202—Montgomery College
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EXAM 4

- There are 110 possible points on this exam. The test is out of 100.

- You have two hours to complete this exam but you should be able to complete it in less than that

- Please turn off all cell phones and other electronic equipment.

- You are allowed a calculator for the exam. This calculator cannot be capable of storing equations. This calculator cannot double as a cell phone.

- Be sure to read all instructions and questions carefully.

- Remember to show all your work.

- Try all questions! You get zero points for questions that are not attempted.

- *Please print clearly and neatly.*

Part I: Matching. *Write the letter from the column on the right which best matches each word or phrase in the column on the left. You will not use all the options on the right and you cannot use the same option more than once.*
    2 points each.

1. **E** Club good
2. **B** Coase theorem
3. **C** Commons
4. **J** Deadweight loss
5. **K** Demand curve
6. **I** Natural monopoly
7. **G** Negative externality
8. **A** Pigou's solution
9. **D** Public good
10. **L** Rivalry

A. Corrects externalities through corrective taxes or subsidies
B. Corrects externalities through exchange
C. Example: a long river multiple farmers draw from to water their crops
D. Example: city roads
E. Example: dating websites
F. Example: potatoes
G. Example: talking loudly in public
H. Example: wearing a nice shirt
I. Excellent economies of scale for the whole market
J. Gains that go to no one
K. Many marginal benefits
L. Marginal cost is greater than zero
M. Stays constant as output increases

1. *A club good is exclubable but nonrivalrous; the marginal cost of adding an additional user is zero. In the case of a dating website, more users actually make the good more valuable (network effect).*
2. *The Coase theorem notes that externalities can be eliminated through market transactions (as long as property rights are assigned).*
3. *Commons are nonexcludable but rivalrous. Each additional user interferes with the consumption of other users but you can't stop them from using it. A river is such an example: each farmer has an incentive to not only take a water from the river but to take a lot of water. The Colorado River is such an example: so much is taken from it to irrigate crops that the Colorado has trouble reaching the ocean!*
4. *When there's an exchange despite MC > MB or no exchange even though MB > MC. In each case, there are unrealized gains.*
5. *A demand curve is a schedule of marginal benefits, in order of lower and lower marginal benefits.*

6. *Supplying the whole demand under diminishing ATC—economies of scale—means no other competitor can compete. One supplier naturally dominates.*
7. *Individuals who talk loudly make the lives around other people worse, much like pollution. Such individuals are not fully accounting the costs of their loudness into the cost-benefit analysis.*
8. *Arthur Pigou argued that you could tax or subsidize an externality so the decision-makers internalize it, thus eliminating deadweight loss.*
9. *A good that's both hard to exclude and an additional user has a marginal cost of zero. While city roads sometimes violate this latter point due to congestion, this violation (a) doesn't occur under ordinary circumstances and (b) when it happens, the marginal cost is very small. (Will traffic move measurably faster during rush hour if you eliminated one car?)*
10. *As noted in the previous question, rivalry can be tricky to nail down sometimes but it can be thought of as the marginal cost of adding an additional user is zero (or very near it).*

Part II: Multiple Choice. *Choose the best answer to the following.*
3 points each.

11. If a maximum production quota is set below equilibrium, what happens to the price?
    a. **It increases**
    b. It stays the same
    c. It decreases
    d. It depends on the elasticity of the good or service
    e. It depends on how big the production quota is

A maximum production quota below equilibrium quantity has an effect (above equilibrium has no effect). Forcing production lower will cause the price to rise.

12. Keeping in mind that most new novels fail, the most likely reason why movies tend to be based on a previous idea, compared to books which tend to be original, is that:
    a. People enjoy watching movies more than reading books.
    b. Authors create a positive externality on readers.
    c. **Movies have a higher fixed cost.**
    d. A & B
    e. None of the above

Because movies have a higher fixed cost, investors prefer to develop on a "proven" story than to risk so much on an original story.

13. What determines who (supply or demand) pays the majority of a tax?
    a. Who is legally assigned to pay the tax
    b. The elasticity of supply
    c. The elasticity of demand
    d. B & C
    e. None of the above

It being the elasticities relative to each other is the same as saying it is both elasticities.

14. Food used to take up one-third of the average budget. Now it is closer to one-sixth. All other things being equal, what can we say has happened?
    a. Food is more elastic.
    b. Food is now a normal good.
    c. Food has fewer substitutes.
    d. A & C
    e. None of the above

Food is now more inelastic because it takes up a smaller portion of a person's budget.

15. A Pigouvian subsidy is supposed to:
    a. Discourage people from producing a good
    b. Discourage people from demanding a good
    c. Encourage people to produce a good
    d. B & C
    e. None of the above

With a subsidy, the market will move along the supply curve and demand curves and (if done correctly) provide the optimal amount to the market (in the sense it's correcting for a positive externality).

16. Using the table of maximum capacities, who has the comparative advantage in what?

	Max Lumber	Max Wine
Oregon	400	100
California	1000	750

    a. Oregon for Wine; California for Lumber
    b. Oregon for Lumber, California for Wine
    c. Oregon for both Lumber and Wine
    d. California for both Lumber and Wine

e. None of the above / It is impossible to tell with the information provided

For Lumber, Oregon gives up 0.25 Wine for each unit of Lumber it makes (100 / 400) while California gives up 0.75 Wine for each unit of Lumber (750 / 1000). Oregon has the comparative advantage in Lumber.

For Wine, Oregon gives up 4 Lumber for each unit of Wine it makes (400 / 100) while California gives up 1.33 Lumber for each unit of Wine it makes (1000 / 750). California has the comparative advantage in Wine.

17. Which of the following (somewhat fictional) headlines are inconsistent with Julian Simon's claim that resources are infinite?
    a. "Toyota to develop new fuel efficient vehicle"
    b. "Tuna on verge of extinction due to overfishing"
    c. "Copper prices rise as China continues its staggering growth"
    d. A & C
    e. None of the above

Both options (a) and (c) capture the adaptive essence of Simon's theory. It's natural that price of most things will rise in the short term when we see expansionary economic activity and it's consistent that people will adapt to that technology. But since no one owns schools of tuna, no one has an incentive to adapt and until this problem can be resolved, tuna stocks are truly finite.

18. On April 17, 2014, *Forbes* published an article by economist Michael Saltzman describing the economic research on the minimum wage.[1] The overwhelming body of research (roughly 85%) points to empirical evidence for increasing unemployment due to the minimum wage (just as theory would predict). Saltzman also notes:

    > [A] study published in the Journal of Human Resources found that a higher minimum wage can actually increase the proportion of families living at or near the poverty line, as the resulting reduction in work hours (or a loss of employment altogether) leads to less take-home pay rather than more.

    What idea does this lower actual wage represent?
    a. True price
    b. Deadweight loss
    c. Shortage
    d. Market price
    e. None of the above

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[1] http://www.forbes.com/sites/realspin/2013/04/17/the-record-is-clear-minimum-wage-hikes-destroy-jobs/

That people get a lower compensation due to the minimum wage suggest their actual compensation is less than what it would be without the price floor. This is our true price (which, in the diagram, is lower than the market price when a price floor is set above equilibrium).

19. Which of the following is a positive externality?
    a. Buying a house
    b. Getting vaccinated
    c. Giving a homeless person some food
    d. B & C
    e. None of the above

Buying a house is just a market transaction. Giving a homeless person some food is also a market transaction, in a way. You, as the donor, are purchasing good feelings. Remember, a positive externality must be externalized to others. You can't give a homeless person food if there's no one to give it to. But you can (and would) get vaccinated if there was no one that could get the disease. You help others incidentally. It is a benefit external to your transaction, thus it's a positive externality.

20. A price ceiling set above equilibrium creates:
    a. A surplus.
    b. A shortage.
    c. Deadweight loss.
    d. A & C
    e. None of the above

A price ceiling set above equilibrium does nothing—it has no impact on the market.

21. If a baby is crying in a restaurant, its guardian(s) is/are
    a. Externalizing costs onto other patrons.
    b. Demonstrating a market failure.
    c. Illustrating an example of a public good.
    d. A & B
    e. None of the above

The crying child is making dining less enjoyable to other patrons—thus it is externalizing costs. This would be a market failure because, like any activity that externalizes costs (e.g. pollution), the actions by individuals lead to an inefficient outcome.

22. Which of the following is a public good?

   a. Public housing
   b. Re-education programs for fired workers
   c. Health care for the poor
   d. B & C
   e. None of the above

All cases are goods that are rivalrous and excludable. Public goods are nonrivalrous and nonexcludable.

23. Which of the following is a true statement?
   a. The demand for beds is less elastic than the demand for furniture.
   b. Monopolies can charge whatever price they want and still earn a profit.
   c. The tragedy of the commons captures both the problems created by externalized costs (negative externalities) and the problems created by externalized benefits (positive externalities).
   d. A & C
   e. None of the above

Externalizing costs appear when one takes resources away from the commons (makes it more costly for others to harvest from the commons). Externalizing benefits do not occur—no one is willing to subsidize everyone else's harvested resources. Thus we have too much of the former (the problem with eternalizing costs) and too little of the latter (the problem with externalizing benefits) and in the end, the tragedy of the commons.

But since beds are a subset of furniture, then there are more substitutes for beds than furniture in general thus beds are more elastic. This might seem strange, however, since beds are a specialized piece of furniture. One cannot easily swap out a bed for a table or a dresser. But the same goes for furniture in general and anything that's a substitute for furniture is also a substitute for a bed.

24. Suppose a hurricane knocks over many trees, blocking the roads into a city and knocking out its power. What changes about the market for ice in the city?
   a. Its supply curve becomes more inelastic.
   b. Its demand curve becomes more elastic.
   c. Its demand curve becomes more inelastic.
   d. A & C
   e. None of the above

There are fewer substitutes for ice and it's become harder to bring ice into the city. Both make the good inelastic (for demand and supply respectively).

**Part III: Short Answer.** *Answer the following.*

12 points each.

25. Consider the market for used cars in the graph below. Illustrate the effects of a $5,000 excise tax on the market for used cars. Highlight the area of deadweight loss. **_Indicate on the lines_** the following values (estimate, if needed): the new quantity sold, the price consumers pay, the price suppliers receive, and the total tax revenue. Does one side (demand or supply) pay more of the tax? Why or why not? (Note that the price is in thousands of dollars…2K is $2,000, etc.)
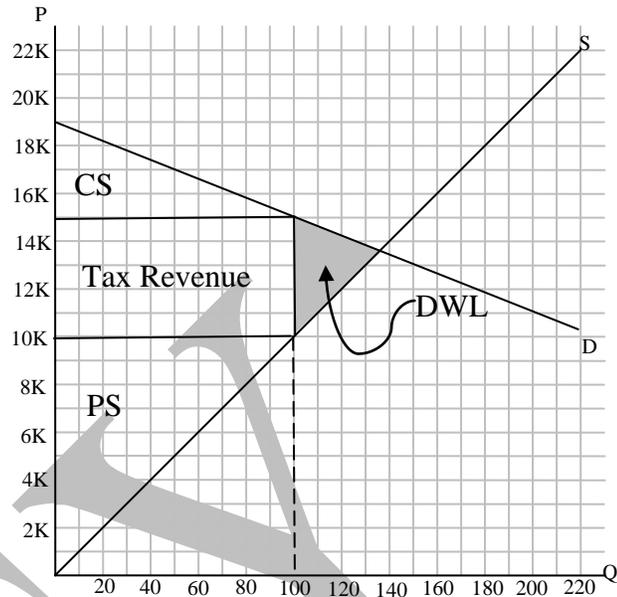
The quantity sold is 100.
Consumers pay $15,000.
Suppliers get $10,000.
Total tax is $500,000.

As suggested by where the tax must come from in relation to market equilibrium, suppliers pay most of this tax since their supply curve is more inelastic than the demand curve.

26. Consider this perfectly competitive firm. Graphically indicate how much the firm should produce and where its profit or loss is. Also graphically illustrate any deadweight loss, if any.
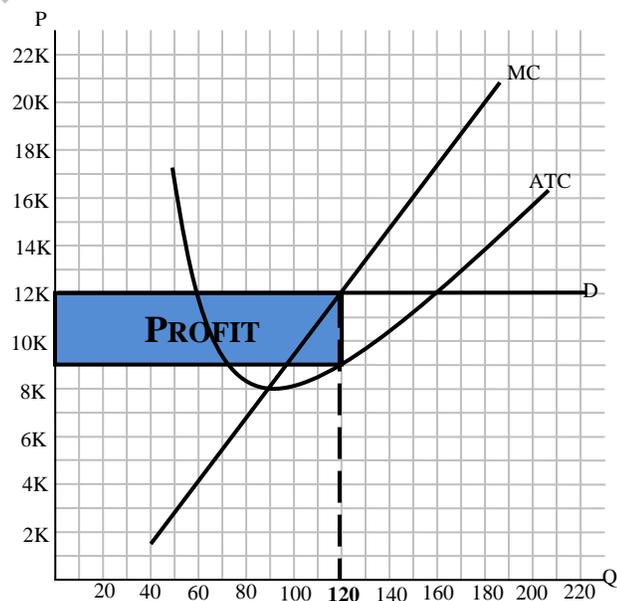
27. Using the diagrams below, illustrate the effects of the following (2 points each).
    a. The market for baseball tickets after a baseball player is accused of using steroids.
    b. The market for trees after people start recycling paper.
    c. The market for steel after the invention of a cheap way to purify aluminum.
    d. The market for food after the invention of the tractor.
    e. The market for healthcare after people continue to grow older and older.
    f. The market for cars after the government taxes steel imports.

    Explanations (not required):

    a. *Fewer people want to go to a baseball game if there's steroid use. For most people, an increase in the perceived use of drugs decreases people's enjoyment.*
    b. *If people recycle paper, trees become less valuable—recycled paper is a substitute for trees to the extent that trees are used to make paper.*
    c. *Aluminum and steel are substitutes so if aluminum becomes easier to make, fewer people will want steel. The benefit of steel has decreased.*
    d. *Tractors make food easier to make, or the marginal cost is lower. Thus supply falls.*
    e. *As people grow older, they will want more healthcare since going to the doctor regularly is more important and going in for specific diagnostics and treatments is more frequent.*
    f. *A tax on imports (a tariff) increases the price of buying steel. Since steel is an input to cars, higher steel prices increase the cost of making cars.*

A P S

D
D'
Q

B P S

D
D'
Q

C P S

D
D'
Q

D P S
S'

D
Q

E P S

D'
D

F P S'
S

D
Q
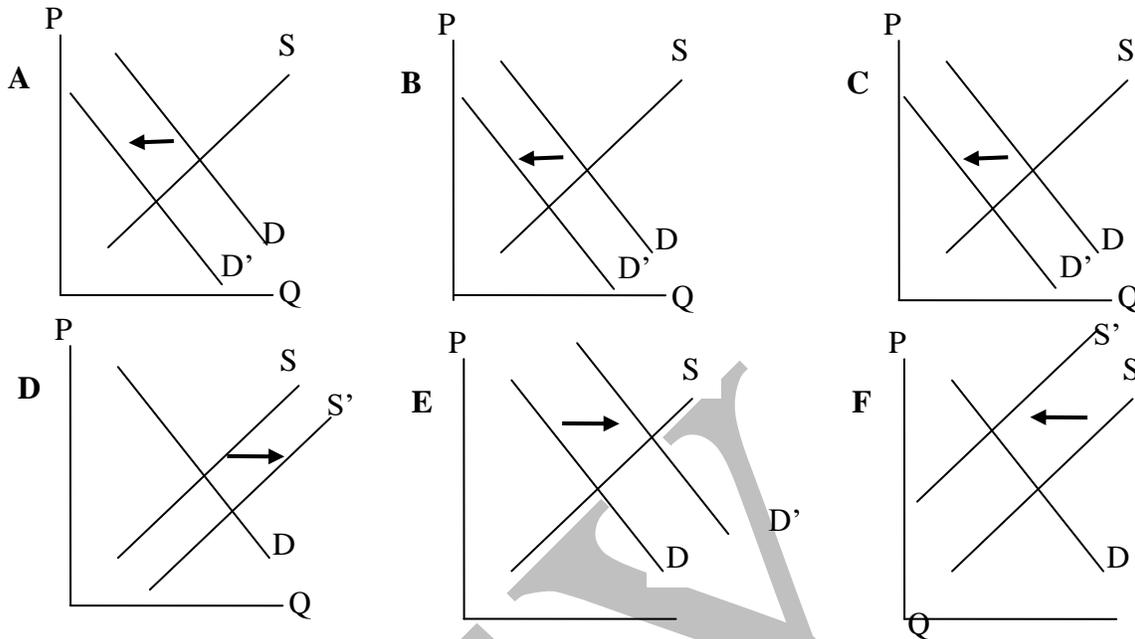
28. Using the arc-price elasticity of demand method and the following information, calculate the price elasticity of demand. Then indicate if the good is elastic, unit elastic, or inelastic.

   a. $Q_1 = 11$, $P_1 = 6$ $Q_2 = 9$, $P_2 = 10$
   b. $Q_1 = 50$, $P_1 = 1$ $Q_2 = 10$, $P_2 = 3$
   c. $Q_1 = 2$, $P_1 = 10$ $Q_2 = 4$, $P_2 = 5$
   d. $Q_1 = 200$, $P_1 = 11$ $Q_2 = 500$, $P_2 = 3$

a.
$$\frac{11 - 9/10}{6 - 10/8} = \frac{2/10}{-4/8} = -0.4, inelastic$$

b.
$$\frac{50 - 10/30}{1 - 3/2} = \frac{40/30}{-2/2} = -1.3, elastic$$

d.
$$\frac{2 - 4/3}{10 - 5/7.5} = \frac{-2/3}{5/7.5} = -1, unit\ elastic$$

e.
$$\frac{200 - 500/350}{11 - 3/7} = \frac{-300/350}{8/7} = -0.75, inelastic$$