

ECON 3304 Public Sector Economics

Midterm

October 18, 2007

Instructions:

1. Think first.
2. Answer the question asked.
3. You may use a pencil and a scantron form and nothing else.
4. You may use the question sheet if you need scratch paper.
5. Turn off your cell phones.
6. No calculators are allowed.
7. No books, notes, or other supplementary materials are allowed.
8. Do not collaborate with your classmates, either directly or indirectly.
9. Turn in both your scantron form and your question sheet and make sure your name is on both.

1. Depletion of fish stocks through overfishing is a good example of the:
 - A) first welfare theorem.
 - B) law of increasing returns.
 - C) tragedy of the commons.
 - D) the Coase theorem.

2. Which of the following is an example of a public good?
 - A) a weather warning system
 - B) a television set
 - C) a sofa
 - D) a bottle of soda

3. If utilities pollute the air “too much” in private equilibrium, corrective taxation of the utilities would:
 - A) reduce pollution.
 - B) shift the marginal private cost curve downward.
 - C) shift the marginal private benefit curve upward.
 - D) both a and b.

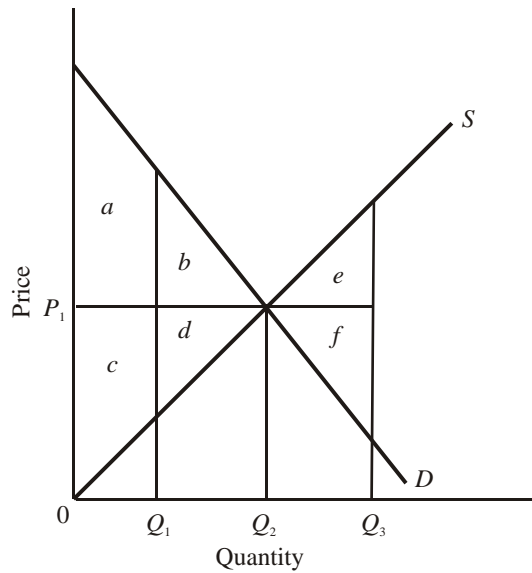
4. Which of the following characterizes optimal provision of a public good?
 - A) total cost = total private benefits for all consumers
 - B) each consumer's surplus = marginal cost
 - C) total consumer surplus = marginal cost
 - D) the sum of all consumers' marginal private benefits = marginal cost

5. Cruise ships generate substantial air and water pollution when they dock. A per ship tax intended to change the number of cruise ships docking at a port to the socially optimal number should be
 - A) greater than marginal external cost.
 - B) equal to marginal external cost.
 - C) greater than marginal social cost.
 - D) equal to marginal social cost.

6. Your neighbor plays loud music that irritates you and the rest of her neighbors. She agrees to turn down the music by 5 decibels for every \$25 she receives from her neighbors, but even though you and your neighbors collectively value reductions of 5 decibels at more than \$25 per person, no one pays. This is an example of what type of problem?
- A) the holdout problem
 - B) the assignment problem
 - C) the free-rider problem
 - D) the transaction costs and negotiating problems
7. In a free market in which there is pollution, the optimal amount of pollution reduction is characterized by which of the following?
- A) Marginal social benefit of pollution reduction is equal its total social cost.
 - B) Total social benefit of pollution reduction is maximized.
 - C) Marginal social benefit of pollution reduction is equal its marginal social cost.
 - D) Marginal social benefit of pollution reduction is equal to zero.
8. Suppose a company that produces chemicals disposes of PCBs (a cancer-causing toxin) into the local lake. The private costs of chemical production are incurred by _____; the social costs of chemical production are incurred by _____.
- A) the company; the company
 - B) the company; people affected by the PCBs
 - C) the company; people affected by the PCBs and the company
 - D) people affected by the PCBs; the company
9. The Coase theorem states that:
- A) government should levy excise taxes on firms that generate spillover or external costs.
 - B) taxes should be levied such that they change private behavior as little as possible.
 - C) bargaining between private parties will remedy market failure due to externalities if property rights are well-defined, the number of people involved are few, and bargaining costs are small.
 - D) trading of votes to secure favorable voting outcomes may increase efficiency.
10. The law of demand states that:
- A) price and quantity demanded are inversely related.
 - B) the larger the number of buyers in a market, the lower will be product price.
 - C) price and quantity demanded are positively related.
 - D) consumers will buy more of a product at high prices than at low prices.

11. A positive externality or spillover benefit occurs when:
- A) product differentiation increases the variety of products available to consumers.
 - B) the benefits associated with a product exceed those accruing to people who consume it.
 - C) a firm produces at the $P = MC$ output.
 - D) economic profits are zero in the long run.
12. Pure public goods are typically not provided via markets because:
- A) there is no need or demand for such goods.
 - B) private firms cannot stop consumers who are unwilling to pay for such goods from benefiting from them.
 - C) public enterprises can produce such goods at lower cost than can private enterprises.
 - D) their production seriously distorts the distribution of income.
13. In a market in which there is pollution and no government intervention, the market equilibrium quantity of pollution reduction is the quantity such that
- A) Pollution reduction is zero.
 - B) Marginal social cost of reduction equals twice the marginal benefit of reduction.
 - C) Marginal social benefit of reduction is equal to its marginal social cost.
 - D) Marginal social benefit of reduction is equal to zero.
14. The law of supply indicates that:
- A) producers will offer more of a product at high prices than they will at low prices.
 - B) the product supply curve is downward sloping.
 - C) consumers will purchase less of a good at high prices than they will at low prices.
 - D) producers will offer more of a product at low prices than they will at high prices.

Use the following to answer questions 15-16:



15. Refer to the above diagram. Assuming equilibrium price P_1 , producer surplus is represented by areas:
- A) $a + b$.
 - B) $a + b + c + d$.
 - C) $c + d$.
 - D) $a + c$.
16. Refer to the above diagram. The area that identifies the maximum sum of consumer surplus and producer surplus is:
- A) $a + b + c + d + e + f$.
 - B) $c + d + f$.
 - C) $a + b + e$.
 - D) $a + b + c + d$.

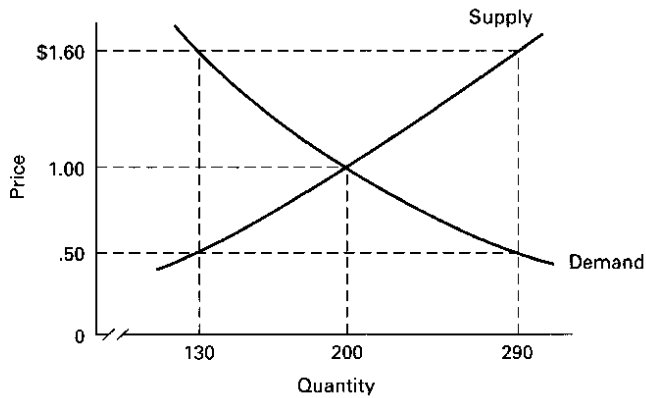
Use the following to answer questions 17-18:

Answer the next question(s) on the basis of the following information for a public good. P_a and P_b are the prices that individuals A and B are willing to pay for the last unit of a public good, rather than do without it. These people are the only two members of society.

<u>Q</u>	<u>P_a</u>	<u>P_b</u>
1	\$3	\$5
2	2	4
3	1	3
4	0	2
5	0	1

17. Refer to the above data. The collective willingness of this society to pay for the 2nd unit of this public good is:
- A) \$2.
 - B) \$4.
 - C) \$6.
 - D) \$8.
18. Refer to the above data. If the marginal cost of this good at the optimal quantity is \$4, the optimal quantity must be:
- A) 1 unit.
 - B) 2 units.
 - C) 3 units.
 - D) 4 units.

Use the following to answer questions 19-21:

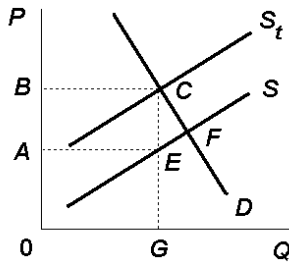


19. The consumer who purchases the 130th unit enjoys consumer surplus equal to
- A) \$0.60
 - B) \$0.50
 - C) \$1.60
 - D) \$1.00
20. Refer to the above diagram. The equilibrium price and quantity in this market will be:
- A) \$1.00 and 200.
 - B) \$1.60 and 130.
 - C) \$.50 and 130.
 - D) \$1.60 and 290.
21. The seller who sells the 200th unit gets how much producer surplus from selling this unit?
- A) \$1.60
 - B) \$1.00
 - C) \$0.50
 - D) \$0.00
22. The _____ is the direct benefit to consumers of consuming an additional unit of a good.
- A) total private benefit
 - B) marginal private benefit
 - C) total social benefit
 - D) marginal social benefit

23. The socially optimal amount of pollution abatement occurs where society's marginal:
- A) benefit of abatement exceeds its marginal cost of abatement by the greatest amount.
 - B) benefit of abatement equals its marginal cost of abatement.
 - C) benefit of abatement is zero.
 - D) cost of abatement is at its maximum.
24. Some argue that education generates positive externalities, so government should subsidize consumption of education. What effect does the subsidy have on the market for education?
- A) It increases demand (MPB)
 - B) It reduces demand (MPB)
 - C) It increases supply (MPC)
 - D) It reduces supply (MPC)
25. The provision of public goods by a private market is characterized by what problem?
- A) the assignment problem
 - B) the free-rider problem
 - C) the irrationality problem
 - D) transaction costs and negotiating problems
26. A negative externality or spillover cost occurs when:
- A) firms fail to achieve allocative efficiency.
 - B) firms fail to achieve productive efficiency.
 - C) price exceeds marginal cost.
 - D) the total cost of producing a good exceeds the costs borne by the producer.
27. If plumes of exhaust from passing buses are inhaled by bicyclists, a _____ externality is being imposed on _____.
- A) positive; bus riders
 - B) negative; bus riders
 - C) positive; bicyclists
 - D) negative; bicyclists
28. Faced with continuous rising demand, many goods or resources owned in common (such as fish in oceans):
- A) increase in price and expand in total availability.
 - B) decline in price and expand in total availability.
 - C) are overconsumed and eventually exhausted, unless protected through restrictions.
 - D) are underconsumed and eventually neglected, unless promoted by government.

29. The two main characteristics of a public good are:
- A) production at constant marginal cost and rising demand.
 - B) nonexcludability and production at rising marginal cost.
 - C) nonrivalry and nonexcludability.
 - D) nonrivalry and large spillover costs.

Use the following to answer questions 30-33:

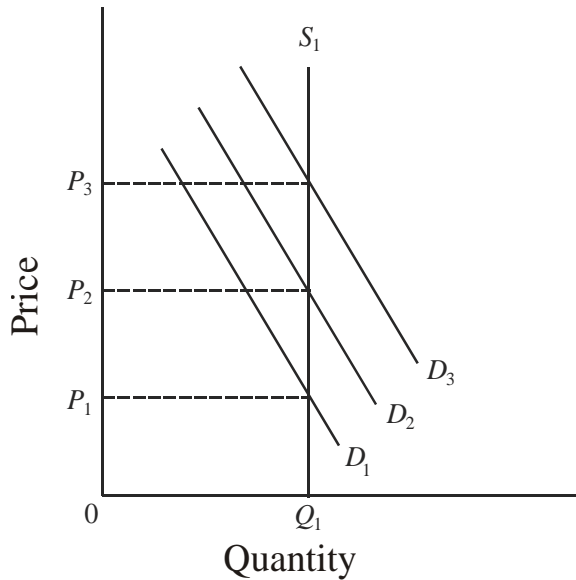


The above diagram is a graph of the market for airline travel. Let D be the demand or marginal private benefit curve, and also the marginal social benefit curve. Let S be the supply or marginal private cost curve. Let S_t be the marginal social cost curve.

30. Which point identifies the equilibrium price and quantity in the market for airline travel?
- A) C
 - B) F
 - C) G
 - D) E
31. The graph of the market for airline travel above indicates that airline travel generates
- A) positive externalities.
 - B) negative externalities.
 - C) no externalities.
 - D) none of the above.
32. Which point identifies the socially optimal quantity of airline travel?
- A) B
 - B) F
 - C) A
 - D) G

33. A Pigouvian tax on airline travel is set equal to what quantity?
- A) E-G
 - B) G-0
 - C) F-A
 - D) B-A

Use the following to answer questions 34-37:



The use of coal to produce electricity generates air pollution in the form of sulfur dioxide (SO_2). Without loss of generality, producing one unit of electricity also generates one unit of SO_2 . To address the problem of acid rain caused by SO_2 , the EPA issues a limited number of tradeable permits to emit SO_2 . The above diagram illustrates the market for permits. The supply of permits, S_1 , is perfectly inelastic. Initial demand for permits is D_2 .

34. What is the initial equilibrium price of permits to emit SO_2 ?
- A) P_1
 - B) P_2
 - C) P_3
 - D) Q_1
35. Suppose technological innovation makes it cheaper for firms to avoid emitting SO_2 as they produce electricity. What happens to demand for permits to emit SO_2 ?
- A) Demand for permits increases to D_3 .
 - B) Demand for permits remains unchanged at D_2 .
 - C) Demand for permits falls to D_1 .
 - D) There is no such thing as demand for pollution.

36. Suppose technological innovation makes it cheaper for firms to avoid emitting SO_2 as they produce electricity. What is the new equilibrium price for permits to emit sulfur dioxide?
- A) P_1
 - B) P_2
 - C) P_3
 - D) Q_1
37. Suppose technological innovation makes it cheaper for firms to avoid emitting SO_2 as they produce electricity. As a result, the equilibrium quantity of air pollution
- A) Increases.
 - B) Decreases.
 - C) Remains unchanged.
 - D) None of the above.

Answer Key

1. C
2. A
3. A
4. D
5. B
6. C
7. C
8. C
9. C
10. A
11. B
12. B
13. A
14. A
15. C
16. D
17. C
18. C
19. A
20. A
21. D
22. B
23. B
24. A
25. B
26. D
27. D
28. C
29. C
30. B
31. B
32. D
33. D
34. B
35. C
36. A
37. C