Midterm Exam 2

Version 1-Yellow

Instructions: Answer each of the questions. Print your name and student number clearly on the answer sheet. Fill in the bubbles corresponding to your student number, leaving the top two boxes blank (or inserting a dash there) and filling in the "0" bubble in the top two rows.

1. My version of the quiz is
   a. Version 1 – Yellow
   b. Version 2 – Purple
   c. Version 3 – Green
   d. Version 4—Pink
   e. Version 5—White

2. You applied and have been accepted to a graduate program. Since you have taken Economics this semester, how would you decide whether or not to attend the program?

   a. Compare the total costs of your undergraduate degree to the total benefits of all of the school you have attended. If this is greater than zero, you should attend.
   b. Compute the net present value of obtaining a masters degree when compared to just finishing your bachelors degree. If the net present value is positive, the future benefits outweigh the costs and you should attend.
   c. If the future value of the benefits is greater than the present value of the costs of attending the graduate program, then you should not attend the program.
   d. If the present value of the costs of attending outweighs the future value of the benefits of attending the program, then you should attend the graduate program.

3. Which of the following is **false** of the human capital model of education?
   a. You calculate the net present value to decide if you want to attain Human Capital.
   b. Additional years of schooling make workers more productive.
   c. Individuals compare future benefits with the present value of costs to determine whether or not to attend.
   d. Individuals obtain degrees merely to signal to future employers that they are ambitious.

4. If I want to compare $Z today to $Y tomorrow, I could do which of the following?
   a. Calculate the present value of $Y and compare it with $Z.
   b. Calculate the future value of $Z and compare it with the present value of $Y.
   c. Calculate the future value of $Y and compare it with $Z.
   d. Calculate the present value of $Z and compare it with the $Y.

5. $100 today is worth how much in 28 years? Assume the interest rate is 2%.

a. $100(1.02)^{28}$

b. $\frac{100}{(1.02)^{28}}$

c. $100(3)^{28}$

d. $\frac{100}{1.02}$

6. Susan loaned money to her friend Jim. Jim has two options. He can pay Susan back today for $5,000, or he can wait 2 years, and pay Susan $7,500 instead. You advise him to pay the $5,000 today if:

a. $5{,}000(1 + r)^2 \leq 7{,}500$

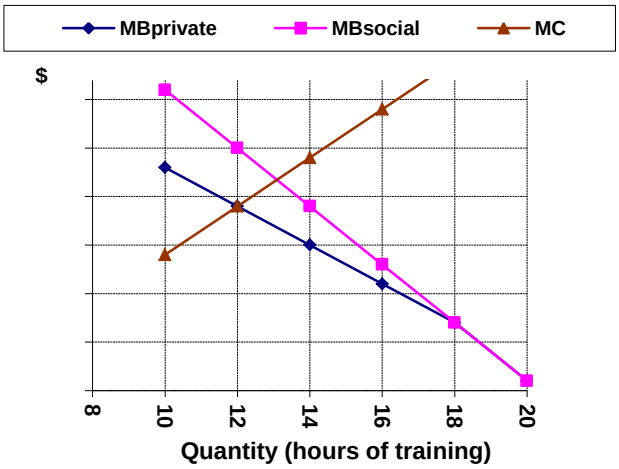
b. $\frac{5{,}000}{(1+r)^2} \leq 7{,}500$

c. $5{,}000 \leq 7{,}500(1 + r)^2$

d. $5{,}000\ (1+r) \leq 7{,}500$

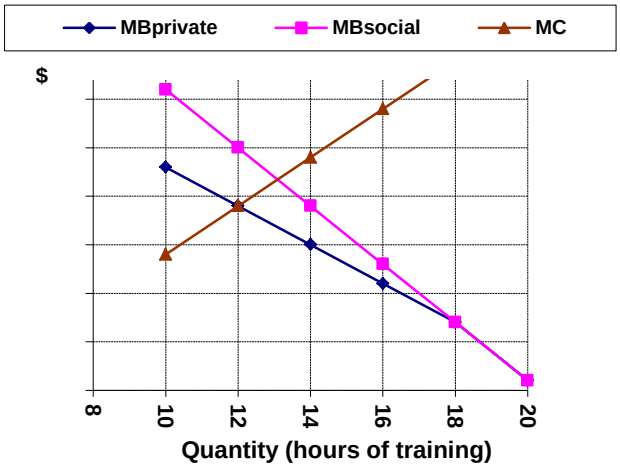
7. Suppose that Mercury Thermometers, Inc. is currently producing at a point where its marginal private cost of production is $15.00. At this level of production, marginal social cost is $25.00. At the current production level, marginal social benefit is $15.00. Thus, the **marginal external cost** associated with Mercury Thermometer, Inc.'s level of production is

a. $10
b. $0 because marginal private cost and marginal social cost are equal
c. $25.00
d. $15.00



8.
The above graph displays the market for an English language training program in the U.S. for foreign born citizens. MC represents the marginal cost of the training program. $MB_{private}$ is the private marginal benefits of the training program, and MB_{social} is the social demand curve and represents the social marginal benefits of the training program. Given the situation depicted the in graph, the private optimum hours of training is _____ the social optimum hours of training?

a. greater than.
b. less than.
c. equal to.
d. unable to determine from the information above.



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The above graph displays the market for an English language training program in the U.S. for foreign born citizens. MC represents the marginal cost of the training program. $MB_{private}$ is the private marginal benefits of the training program, and MB_{social} is the social demand curve and represents the social marginal benefits of the training program. Which of the following interventions could result in the socially optimal level of training?

a. a tax on the program in the amount of the externality.
b. a subsidy to the program in the amount of the externality.
c. a law regulating 12 hrs of training for each foreign born citizen.
d. Both b and c would work.

10. In order to produce the socially optimal level of a good when there is a negative externality (i.e. the marginal social cost exceeds the marginal private cost), the government should:

a. subsidize the good.
b. tax the good.
c. export the good.
d. put a price ceiling on the good.

11. A CNN reporter claims that there are too few college graduates in the U.S. Which of the following most accurately depicts the analysis of the situation and your policy recommendation?

a. College education provides a positive externality, making it under-produced, so the government should increase taxes on college education.
b. College education provides a positive externality, making it under-produced, so the government should increase subsidies on college education.
c. College education provides a negative externality, making it under-produced, so the government should place a quota on college education.
d. College education provides a negative externality, making them under-produced, so the government should place a price ceiling on college education.

Use the following information for the following four questions: Suppose that two firms own factories on the coast of a large lake in a rural area. The first firm, Firm 1 makes leather work gloves and the second firm, Firm 2, makes leather wallets. Both firms use a chemical to assist in tanning the leather. Once used, the chemical is poured into the lake by both firms. Previous studies have shown that the used chemical is harmless to fish in the lake in small quantities. A new study, however, has revealed that large quantities – those above 10,000 gallons per year – will begin to harm wildlife. The local government has thus decided to cap the total amount that the two factories can dump into the river at 10,000 gallons per year. This will be problematic for the firms as Firm 1 currently dumps 15,000 gallons per year into the lake and Firm 2 currently dumps 25,000 gallons per year into the lake. Finally, note that, if Firm 2 has to reduce the amount of the chemical that it dumps into the lake, it will use 1 gallon of a chemical that costs $1/gallon more and can be harmlessly dumped into the lake for each fewer gallon of the old tanner. Due to the need for long-lasting leather, Firm 1, on the other hand, would have to stick with the old tanner and pay $3/gallon to have it disposed of safely.

12. Suppose the government allows each firm to dump 5,000 gallons of the chemical in the lake. If the firms cannot buy or sell these allowances to or from each other, how much will eliminating the negative externality cost society?

a. $10,000
b. $20,000
c. $50,000
d. $100,000

13. If the firms can buy or sell these allowances to or from each other, how much of the chemical will Firm 1 dump into the lake?

a. 10,000
b. 15,000
c. 5,000
d. 0

14. If the firms can buy or sell these allowances to or from each other, what is the minimum price the ability to dump 1 gallon of the chemical into the lake will cost?

a. $1
b. $0
c. $2
d. $3

15. If the firms can buy or sell these allowances to or from each other, how much will eliminating the negative externality cost society?

a. $50,000
b. $30,000
c. $100,000
d. $40,000

16. Which of the following is an example of a public good?

a. a lighthouse
b. a movie theatre
c. admission to Montana State University
d. bottled water

17. Which of the following is a reason that education needs to be publicly provided?

a. The human capital model says that additional years of schooling do not make individuals more productive.
b. The signaling model says that school does not make individuals more productive.
c. Education provides positive externalities for society that would be under-produced in the absence of government intervention.
d. Both b and c are correct.

18. The marginal social cost of providing good X exceeds the marginal private cost of providing good X. The marginal social benefit of consuming good X and the marginal private benefit of good X are identical. This means:

a. There is a positive externality in the market for good X.
b. There is a negative externality in the market for good X.
c. There are no externalities present in the market for good X.
d. There is not enough information available to tell if there is or is not an externality in the market for good X.

19.

	SO2 Emissions: Tons/Day	***Marginal Cost of SO2 Reduction (per ton)***
Smokestack 1	250	$200
Smokestack 2	350	$300
Smokestack 3	100	$500

Suppose Leroy owns three smokestacks (shown in the table above), and the EPA imposes a regulation requiring him to cut his emissions in half. He comes to you for advice, and you tell him the most cost-effective way to cut down his emissions. How much will this cost him? (Hint: Assume that it is feasible to reduce emissions to 0 at any given smokestack.)

a. $115,000
b. $110,000
c. $80,000
d. $100,000

20.

	SO2 Emissions: Tons/Day	***Marginal Cost of SO2 Reduction (per ton)***
Firm 1	300	$200
Firm 2	300	$400
Firm 3	300	$500

Assume there are 3 Firms in the electricity business and the EPA imposes a regulation to reduce industry-level emissions by a half (see Table above). If they are to do this in the most cost effective way possible (as an industry), this would cost _____ **less than** if each firm were instead to reduce emissions by 50%. (Hint: Assume that it is feasible to reduce emissions to 0 at any given Firm.)

a. $120,000
b. $165,000
c. $45,000
d. $90,000

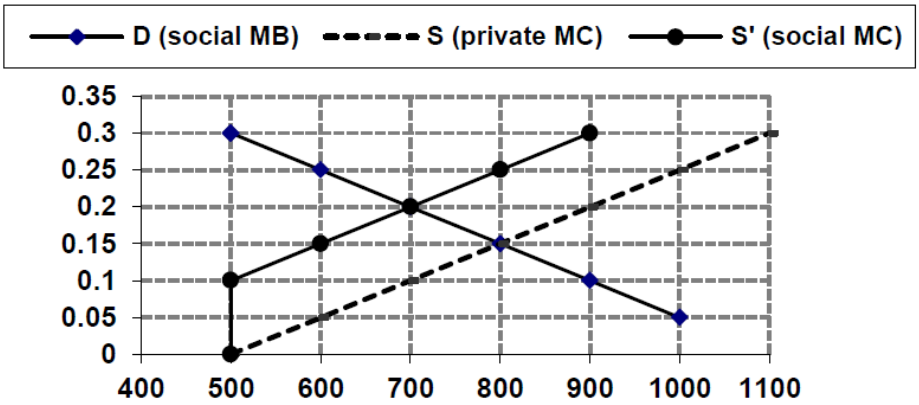
21.

	SO2 Emissions: Tons/Day	***Marginal Cost of SO2 Reduction (per ton)***
Firm 1	300	$200
Firm 2	300	$400
Firm 3	300	$500

Assume there are 3 Firms in the electricity business and the EPA imposes a regulation to reduce industry-level emissions by a half (see Table above). If each firm were given a tradable permit for 200 tons/day of SO2 emissions, Firm ___ would be most likely to buy Firm ___'s permit for at most ____.

a. 3; 1; $200.
b. 1; 3; $200.
c. 3;1; $500.
d. 1; 3; $500.

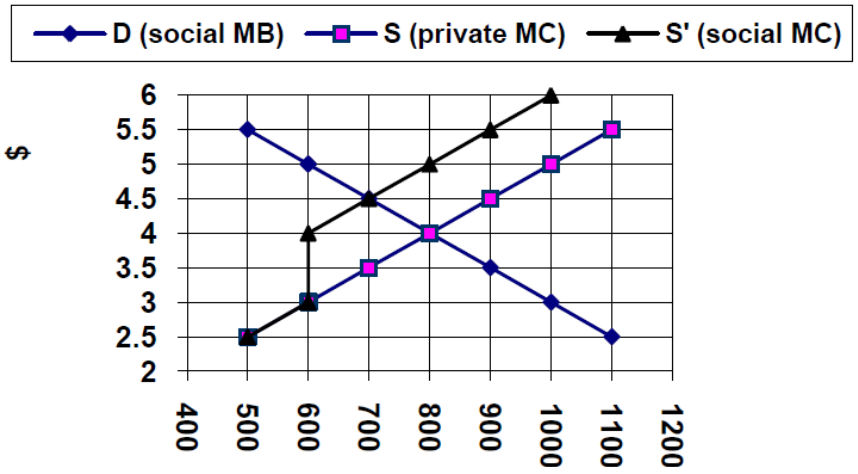
22. The Coase Theorem suggests that
    a. there can never be an efficient outcome in the presence of an externality.
    b. there is naturally an efficient outcome in the presence of an externality.
    c. assigning property rights is one way to generate an efficient outcome in the presence of an externality.
    d. externalities always result in outcomes that are not equitable.



23.

The graph above displays the market for strawberries in Bozeman, where they must be imported from other states. These transportation requirements create a large amount of pollution, and the graph shows that the social optimum quantity of strawberries is _____ than the private optimum quantity of strawberries.
    a. greater than.
    b. less than.
    c. equal to.
    d. unrelated to.

24. In the event of a negative externality:
    a. producers need additional incentives to reduce production to the level society deems efficient.
    b. the good will be under-provided without government intervention.
    c. the good should be subsidized.
    d. producers will reduce production of the good on their own.



25.
The graph above shows the market for electricity in Bozeman, where dollars are in hundreds. The production process causes a great deal of pollution, and hence, the private and social marginal cost curves differ. The private optimum in this graph occurs at _____ and at a price of _____.

a. 700; $450
b. 800; $400
c. 600; $400
d. 700; $350

26.

Methamphetamine Use (per gram)	Private Marginal Costs ($MC_{private}$)	Social Marginal Costs (MC_{social})	Marginal Benefits (MB)
0	1000	1500	5000
10	2000	2500	4000
20	3000	3500	3000
30	4000	4500	2000
40	5000	5500	1000
50	6000	6500	0

The above table depicts the market for methamphetamine (meth), an illegal substance. The second column shows the Private Marginal Costs, followed by the Social marginal Costs associated with the drug production and consumption. The final column depicts the Marginal Benefits, or the demand curve for meth. Given the information above, what is the per gram amount of the externality (the external costs to society from the drug production and consumption)?

a. $3,000
b. $50
c. $1,000
d. $500

27. When the absolute value of the percentage change in quantity demanded is greater than the absolute value of the percentage change in price, this means the good is

a. elastic.
b. inelastic.
c. normal.
d. unit elastic.

28. Joey's acting classes maximizes its total revenue by selling lessons at $50/hr. Ceteris paribus, at a price of $60/hour, you predict that

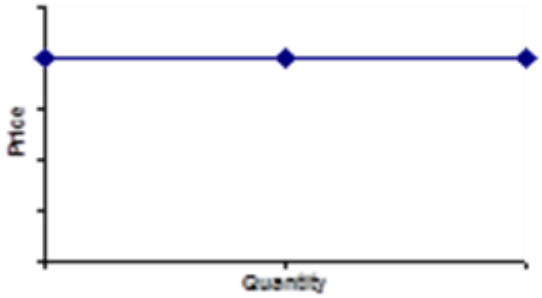
a. the demand for acting lessons is elastic.
b. the demand for acting lessons is inelastic.
c. the demand for acting lessons is unit elastic.
d. there is excess demand for acting lessons.

29. A decrease in the supply of a good results in no change in the quantity demanded of the good traded when:

a. demand is perfectly inelastic.
b. demand is perfectly elastic.
c. demand is unit elastic.
d. the elasticity of demand is 1.

30. Tim Cook (the CEO of Apple) tells you that the elasticity of demand for iPads is -4. You notice that this month, the price of the iPad has decreased by 5%, you accurately predict that the quantity of MS Office software will:

a. fall by 20%
b. rise by 20 %
c. fall by 5/4 %
d. rise by 5/4 %



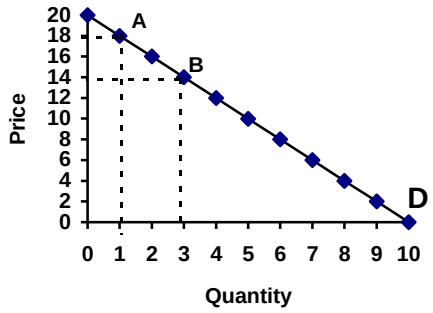
31.

The above depicts a demand curve that is:

a. unit elastic.
b. perfectly inelastic.
c. perfectly elastic.
d. relatively elastic.

32. When demand is inelastic, a rise in the price of a good

a. increases total revenue.
b. decreases total revenue.
c. does not change total revenue.
d. always results in negative revenue.



33.

In the above graph, when moving from point A to point B will _____ total revenue by _____.

a. decrease; 24
b. decrease; 4
c. increase; 42
d. increase; 24

ANSWER KEY

1	a
2	b
3	d
4	a
5	a
6	a
7	a
8	b
9	b
10	b
11	b
12	C
13	A
14	A
15	D
16	a
17	c
18	b
19	c
20	c
21	c
22	c
23	b
24	a
25	b
26	d
27	a
28	a
29	a
30	b
31	c
32	a
33	d