Economics 390
Fall 2021
Second Midterm with Answers

Name ANNOTATED KEY

I understand that this is close book, no notes, no calculator exam.

I understand that providing help to another student or seeking help from another human being on this exam will be considered academic misconduct and that if I engage in this conduct, I will get a zero on this exam.

Signed _____

Binary Choice and Multiple Choice Score: _____

Essay #1 Score: _____

Essay #2 Score: _____

TOTAL SCORE: _____

Binary Choice: 10 questions worth 2 points each

EASY 1. "The Platinum Rule" suggests that:

a. "Do unto others as you would have them do unto you." → GOLDEN RULE
b. "Do unto others as they would have you do unto them."

EASY 2. Which of the following goods exemplifies an example of a public good?

a. Street lights in a community non-rival and non-excludable
b. A national park with an entry fee
↳ means it is excludable

A LITTLE THOUGHT 3. Ed is pursuing an apprenticeship program where he is learning to be a plumber. This training program Ed considers to be a good investment on his part since he believes that once he gets this training his hourly wage will increase from $10 per hour to $70 per hour. The community that Ed lives in will also benefit from Ed's decision to get this training: they will be able to collect more taxes from Ed when he earns the higher wage; Ed will likely be less dependent on the safety net programs to help low income people in his community; and he may decide to become a mentor for other young people thinking about a career in plumbing. This example depicts:

a. A positive consumption externality. Ed's consumption decision creates benefits for his community
b. A positive production externality. X
↳ Ed is making a consumption decision and not a production decision

EASY 4. Josie loves to go to the local free public beach. But, when she arrived at the beach this past Saturday she found that the beach was packed with people and she had trouble finding a space to spread out her beach blanket. In this case the free public beach is:

a. an excludable good.
b. a rival good.
↳ congestion → so good is no longer non-rival
↳ good is rival and non-excludable

EASY 5. Which of the following statements is true?

a. By world standards where we compare level four countries with other level 4 countries, the United States has a relatively low infant mortality rate. X US has high infant mortality rate
b. Compared to other level 4 countries, the United States has a high infant mortality rate.

NOT HARD 6. Relative to other high-income countries in the world, the United States has:

a. A greater percentage of their population covered by health insurance.
b. A lower percentage of their population covered by health insurance.

NOT HARD 7. A Pigouvian tax is:

a. A tax imposed on a good to increase the externality from the good.
b. A tax imposed on a good to reduce the externality from the good.

Pigou proposed taxes as one way to correct for a negative externality

EXAMPLE DRAWN FROM BOOK - SHOULD BE EASY 8. In Hans Rosling's book **Factfulness** he discusses situations where there are limited resources and how best to utilize these limited resources to address huge needs. He counsels his readers to beware the size instinct which leads:

a. To too many resources being directed at solving particular individuals' problems rather than broadly systemic problems, since the problems that specific individuals have are the problems that the individuals tasked with helping to meet unmet needs can most readily see.
b. To too many resources being directed to community programs, like primary schools and nurse education, that are unlikely to change local outcomes in a positive and significant way.

EASY 9. Consider Tom and Betty who have a thirty year fixed rate mortgage on their home. They took out the mortgage in 2019 and it is now late 2021. Each month Tom and Betty make their monthly mortgage payment. Given this information which of the following statements is true?

a. Tom and Betty's monthly payment for their mortgage fluctuates: when the interest rate is low, this reduces their mortgage payment and when the interest rate is high, this increases their monthly mortgage payment. X - it's a fixed rate mortgage X monthly payment does not change
b. The amount that Tom and Betty pay each month as a mortgage payment does not change over time, but the amount of that payment that reflects an interest payment on the loan is declining over time. ✓

NOT BAD 10. Consider the market for used cars. Buyers estimate that 30% of the used cars in the market are of poor quality and worth only $2000 per car; 60% of the used cars in the market are of fair quality and worth only $5000 per car; and 10% of the used cars in the market are of good quality and worth $8000 per car. Buyers are unable to look at a car and know with certainty whether the car is of poor, fair, or good quality. Given this information and holding everything else constant, the rational buyer is willing to offer:

a. $5000 per car.
b. $4400 per car.

.3(2000) + .6(5000) + .1(8000) = price buyer will offer
600 + 3000 + 800 = $4400 per car

Multiple Choice: 20 questions worth 3 points each

EASY

11. Bob hates wearing a mask. Bob hates social distancing. Bob really does not enjoy washing his hands. Bob finds living with the COVID pandemic really unpleasant and difficult. Bob chooses to not wear a mask, to not social distance, and to not wash his hands with any frequency. From a societal perspective Bob's behavior represents:

a. The individual's right to free expression and free will.
b. A negative production externality.
c. A public good since Bob's consumption choices with regard to masks, social distancing, and hand washing represents non-rival and non-excludable goods.
d. A negative consumption externality.

↳ Bob is a consumer and not a producer in these activities

SOME WORK

12. Consider two countries: Sweetland and Boxton. Both countries are concerned about climate change and are considering policies where they would reduce their use of fossil fuels. Sweetland anticipates that if they reduce their use of fossil fuels at the same time that Boxton also reduces their use of fossil fuels, then Sweetland will experience a payoff worth $150 million due to the climate improvement from this choice. Boxton estimates that their payoff if both countries reduce their use of fossil fuels will be $125 million. If only Sweetland reduces their use of fossil fuels, then Sweetland will get a payoff of $50 million and Boxton will get a payoff of $160 million. If only Boxton reduces their use of fossil fuels, then Sweetland will get a payoff of $90 million while Boxton gets a payoff of $30 million. If both countries decide to continue to use fossil fuels at their current rate, then Sweetland will get a payoff of $55 million and Boxton will get a payoff of $52 million.

Given this information and holding everything else constant, how many of the following statements are true?

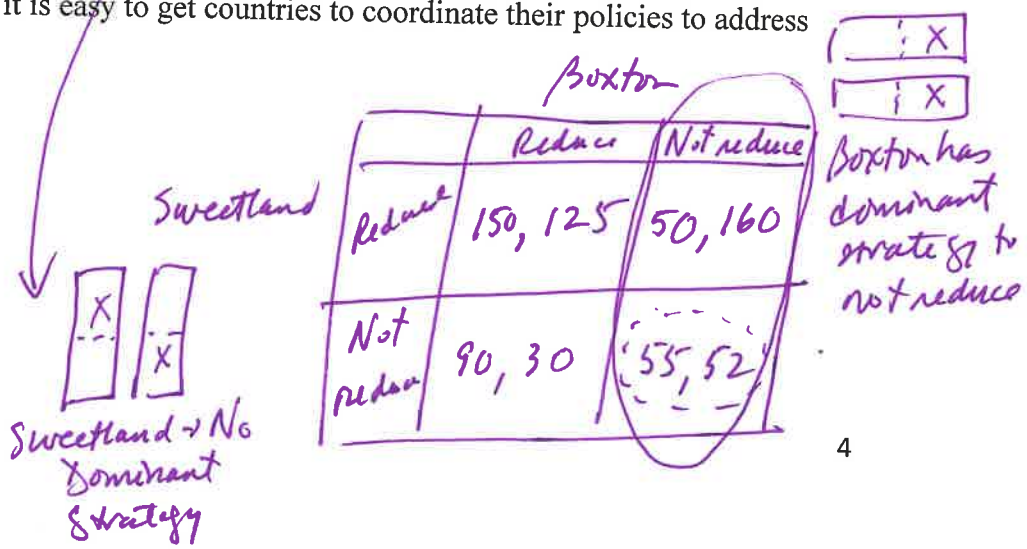
*Sweetland does not have a dominant strategy. T

*Both Boxton and Sweetland will continue to use fossil fuels at their current rate. T

*No matter what Sweetland chooses to do, Boxton will always pursue a strategy of continuing to use fossil fuels at their current rate. T

*This example illustrates why it is easy to get countries to coordinate their policies to address climate change. F

a. Two statements are true.
b. Four statements are true.
c. Three statements are true.
d. One statement is true.



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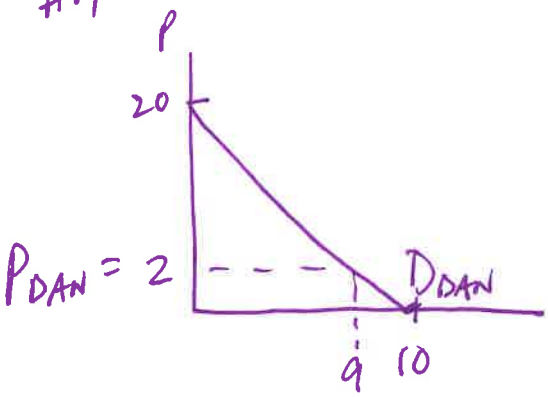
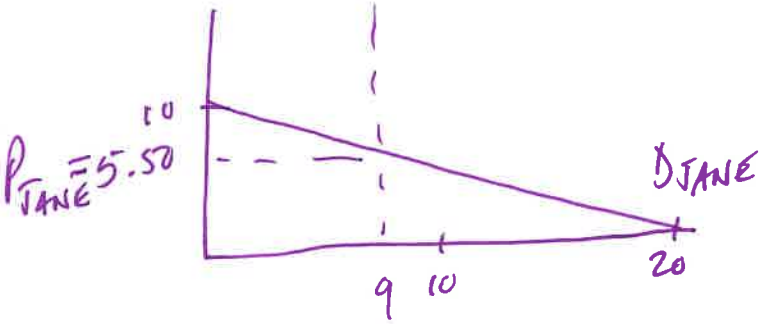
#14



D_{DAN}: $P = 20 - 2Q$

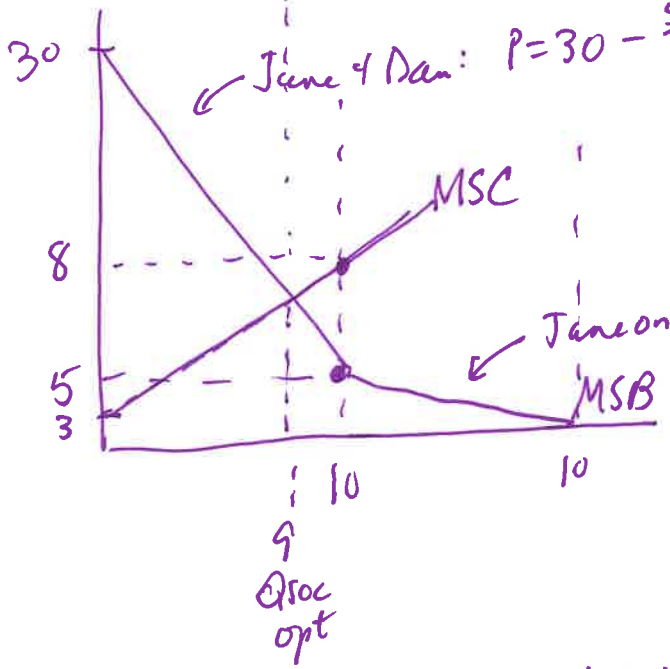
if $Q = 9 \Rightarrow P_{DAN} = 20 - 2(9) = \$2/\text{unit}$

Total expenditure by Dan is $P \cdot Q =$ $(\$2/\text{unit})(9 \text{ units}) = \$18$



D_{JANE}: $P = 10 - \frac{1}{2}Q$

if $Q = 9 \Rightarrow P_{JANE} = 10 - \frac{1}{2}(9) = \$5.50$



$MSC = 3 + \frac{1}{2}Q$

To get $Q_{SOC\ opt}$

$MSB = MSC$

$30 - \frac{5}{2}Q = 3 + \frac{1}{2}Q$

$27 = \frac{6}{2}Q$

$9 = Q_{SOC\ opt}$

We know to use upper segment of D curve $\Rightarrow$

if $Q = 10 \Rightarrow MSC = 3 + \frac{1}{2}(10) = 8$

$8 > 5 \Rightarrow$ look at kink point

$\Rightarrow$ kink point is (10, 5) and MSC goes through points (0, 3) and (10, 8)

if $Q = 9 \Rightarrow MSC = 3 + \frac{1}{2}(9) = \$7.50$

CONTINUE EXAM! EXAM HAS 30 SCANTRON QUESTIONS AND 2 ESSAY QUESTIONS

EASY

13. You go to an auction for the first time. When you get there, the auctioneer tells you that the bidding will start low and that the highest bid will get to buy the good at the second highest bidder's price. For example, suppose you bid the greatest amount and that amount is $480 for that antique lamp and the next highest bidder bid $475. At this auction you will get to buy the lamp for $475. This type of auction is referred to as a:

a. A Dutch-style auction.
b. An American-style alternative price auction.
(c) Second-price auction.
d. American-style auction.

A LOT OF WORK

14. Consider a public good in a community that has two residents: Dan and Jane. Here are Dan and Jane's demand curves for the public good where P is the price per unit and Q is the number of units of the public good:

Dan's demand for the public good: $P = 20 - 2Q$

Jane's demand for the public good: $P = 10 - (1/2)Q$

You are also told that the marginal social cost (MSC) of producing the public good is provided by the following equation:

$MSC = 3 + (1/2)Q$

Given this information and holding everything else constant, how many of the following statements are true?

*The socially optimal amount of the good is 9 units. T [see next page]

*If the socially optimal amount of the good is produced then the total cost per unit for the good will be $7.50. T

*If the socially optimal amount of the good is produced then Dan will expend a total of $18 to get the public good. T

*If the socially optimal amount of the good is produced then Jane will pay $5 per unit of the public good. F

a. Four statements are true.
(b.) Three statements are true.
c. One statement is true.
d. Two statements are true.

SOME THOUGHT

15. Consider Marlo who has a thirty year fixed rate mortgage. How many of the following statements are true for Marlo?

I. Toward the end of the thirty year period of time Marlo's monthly payment primarily is paying down the principal she owes. T

II. Toward the beginning of the thirty year period of time Marlo's payment is primarily an interest payment due on the amount she owes. T

III. Initially in the early months of Marlo's loan, her monthly payments reflect the payment of an equal dollar amount paid to reduce the principal she owes and the interest she is being charged on the loan. F

IV. Suppose that Marlo's income increases over the thirty year period of time. Given this information and holding everything else constant, her monthly payment will be easier for Marlo to make with the passage of time. T

(a.) Three statements are true.
b. Two statements are true.
c. One statement is true.
d. Four statements are true.

EASY, IF YOU CAME TO CLASS

16. Suppose that the annualized percentage rate on a loan is 12%. Given this information and holding everything else constant, then the monthly interest rate on this loan is:

a. 4%
b. 3%
(c.) 1%
d. 12%

$\frac{12\%}{12} = 1\%/\text{month}$

EASY

17. A low income individual in the United States if they receive health insurance coverage through a public insurance program is most likely to receive that health insurance from:

(a.) Medicaid.
b. Affordable Care Act (ACA).
c. CHIPS.
d. Medicare.

EASY

18. Consider Joey who just turned sixteen last week and on this past Tuesday he got his driver's license. Late on Tuesday afternoon Joey borrowed his mother's car and once he had driven out of the neighborhood he decided he wanted to see what driving at 70 miles an hour felt like. The roadway was wide open with few cars and even though the speed limit was 35, Joey pressed his foot down on the accelerator and got the car's speed up to 73 miles per hour. This story essentially illustrates:

a. A moral hazard problem since Joey is engaging in behavior that is morally hazardous to others.
b. Both a moral hazard and an adverse selection problem since Joey's behavior carries a risk of potential harm to both Joey and the car.
c. The adverse selection problem since Joey is essentially engaging in behavior that illustrates that he has been adversely selected from the perspective of what his mother would like to achieve.
d. No real problem since Joey is a good driver, is young and has great reflexes, and his mother's car is an old, almost-worn out used car.

MORE THOUGHT

19. Consider a market that is currently producing Qmarket. At Qmarket, the marginal social cost is greater than the marginal social benefit. Given this information and holding everything else constant, how many of the following statements are true?

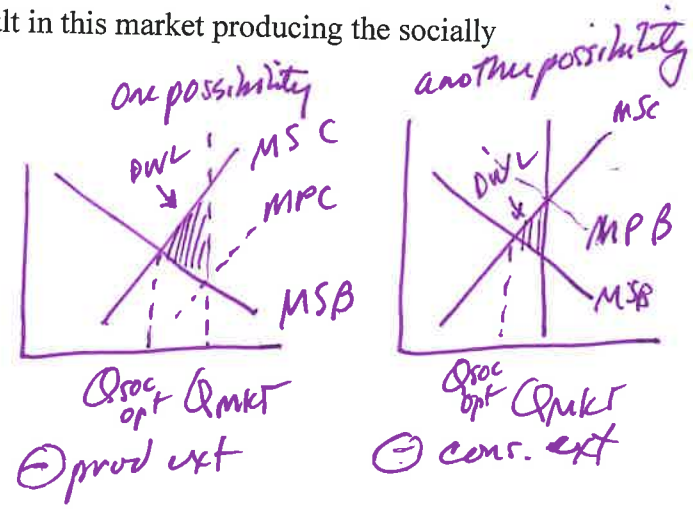
*The socially optimal quantity of the good is greater than Qmarket. F

*This situation could be the result of a negative production externality that is not internalized by the market. T

*Since Qmarket is greater than the socially optimal quantity of the good, there is no deadweight loss in this market. F

*Imposition of an excise tax on producers could result in this market producing the socially optimal amount of the good. T

a. Three statements are true.
b. One statement is true.
c. Four statements are true.
d. Two statements are true.



CHALLENGING

20. Consider the market for health care. In this market there are two types of consumers: poor consumers and non-poor consumers. The following equations provides the demand for health care from these two groups where P is the price of a unit of health care services and Q is the number of units of health care services:

Demand for health care services from the poor: P = 100 - Q

Poor: if $P = 90 \Rightarrow P = 100 - Q$

Demand for health care services from the non-poor: P = 1000 - (1/2)Q

You are also told that the supply of health care services is given by the following equation:

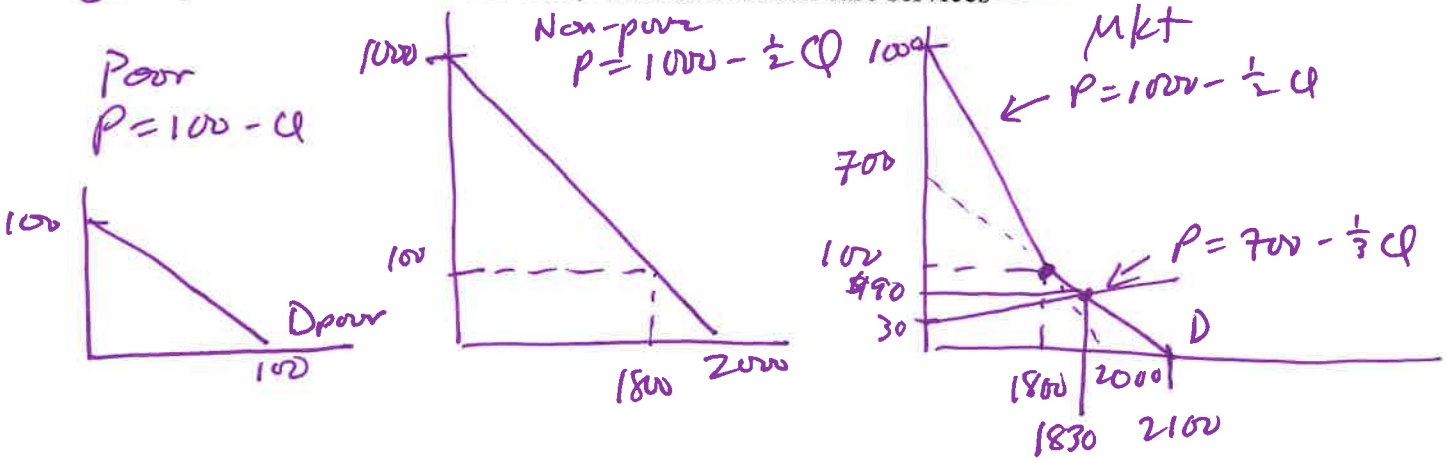
Supply of health care services: P = 30 + (2/61)Q

$90 = 100 - Q$

$Q_{poor} = 10$ units

Suppose the government has no program to help provided health care services to the poor. Given this information and holding everything else constant, the equilibrium price of health care services will be ____ and the poor will consume _____ units of health care services.

a. $30 per unit of health care services; 70 units of health care services
b. $80 per unit of health care services; 20 units of health care services
c. $60 per unit of health care services; 40 units of health care services
d. $90 per unit of health care services; 10 units of health care services



2 mkt D curves: $P = 1000 - \frac{1}{2}Q$ for $P \geq 100$

$0 = t - \frac{1}{3}(2100) \leftarrow P = t - \frac{1}{3}Q$ for $P \leq 100$

$t = 700$

$P = 700 - \frac{1}{3}Q$

Where does S intersect D? $Q = 1800 \Rightarrow P_{supply} = ?$

$P = 30 + \left(\frac{2}{61}\right)(1800) \approx 30 + 6 \approx 36 \Rightarrow$ use lower segment

$D = S$

$700 - \frac{1}{3}Q = 30 + \frac{2}{61}Q$

$670 = \frac{1}{3}Q + \frac{2}{61}Q$

$(3)(61)670 = 61Q + 6Q$

$3(61)(670) = 67Q$

$Q = \frac{3(61)(670)}{67}$

$Q = 3(61)(10) = 1830$

$P = 30 + \left(\frac{2}{61}\right)(1830) = 30 + 2(30) = 90$

*Can stop here since there's only one consumer with this price

SOME WORK

21. Consider the market for health care. In this market there are two types of consumers: poor consumers and non-poor consumers. The following equations provides the demand for health care from these two groups where P is the price of a unit of health care services and Q is the number of units of health care services:

Demand for health care services from the poor: $P = 100 - Q$

Demand for health care services from the non-poor: $P = 1000 - (1/2)Q$

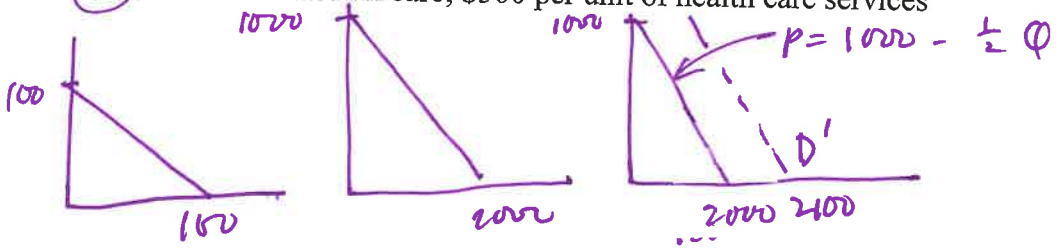
You are also told that the supply of health care services (Note: this is a different supply curve from a previous question) is given by the following equation:

Supply of health care services: $P = 30 + (9/50)Q$

Suppose the government implements a program where they provide free health care services to the poor.

Given this information and holding everything else constant, the equilibrium quantity of health care services for the poor and the non-poor will be ____ and the price the non-poor will pay for a unit of health care services will be _____.

a. 100 units of health care services; \$950 per unit of health care services
b. 1600 units of health care services; \$250 per unit of health care services
c. 1400 units of health care services; \$350 per unit of health care services
d. 1500 units of health care; \$300 per unit of health care services



$D' \Rightarrow P = 1000 - \frac{1}{2}Q$

$0 = 1000 - \frac{1}{2}(2400)$

$1000 = 1050$

$\boxed{P = 1050 - \frac{1}{2}Q}$

$S \Rightarrow P = 30 + \frac{9}{50}Q$

$1050 - \frac{1}{2}Q = 30 + \frac{9}{50}Q$

$\frac{34}{50}Q = 1020$

$Q = 1020\left[\frac{50}{34}\right]$

$Q = \frac{510(50)}{17} = 30(50) = 1500$ *

* Stop here => only one answer w/ this quantity

$P = 30 + \frac{9}{50}[1500]$

$P = 30 + 9(30) = 30 + 270 = 300$ A

Use the following information to answer the **next two (2)** questions.

Consider a firm that has decided to hire workers at two different wage rates: they plan to pay a gross wage of $20 per hour for workers who have six years of schooling beyond the compulsory level of schooling and they plan to pay a gross wage of $15 per hour for workers who do not have this level of schooling (that is, they have less education). The firm distinguishes three broad categories of potential workers: high-quality workers, mid-quality workers, and low-quality workers. The cost of attaining the educational credential differs for each category of worker and is given by the following equations where C is the cost they give up per hour and Q is the number of years of schooling:

Cost of educational credential for high-quality worker: C = .2Q ⇒ C = .2(6) = 1.2 ⇒ netwage = 20 − 1.2 = 18.8

Cost of educational credential for mid-quality worker: C = .4Q ⇒ C = .4(6) = 2.4 ⇒ netwage = 20 − 2.4 = 17.6

Cost of educational credential for low-quality worker: C = Q ⇒ C = 6 ⇒ netwage = 20 − 6 = 14

SOME THOUGHT

22. Given this information and holding everything else constant, if the low-quality worker gets the educational credential then their net wage (net of costs) will equal #14* and if the mid-quality worker gets the educational credential then their net wage will equal _____.

a. $26 per hour; $22.40 per hour
b. $15 per hour; $17 per hour
c. $15 per hour; $20 per hour
d. $14 per hour; $17.60 per hour

* Stop here ⇒ only one answer w/ this #

NOT TOO BAD

23. Given this information and holding everything else constant, which of the following statements is true?

a. The net wages for the high-quality and the mid-quality workers will end up converging to the same amount. F
b. Only the high-quality workers will decide that getting the educational credential is worth it. F
c. The mid-quality and the high-quality workers will find that getting the educational credential boosts their net wage above $15 per hour. T
d. Both the low-quality and mid-quality workers will decide that getting the educational credential is worth it. F

get educational credential if netwage > #15/hour

WORKSHEET: DO NOT REMOVE FROM THE EXAM!

CONTINUE EXAM! EXAM HAS 30 SCANTRON QUESTIONS AND 2 ESSAY QUESTIONS

SOME THOUGHT

24. Paul Samuelson argues that once a public good is provided then it can be enjoyed/consumed by lots of people without any additional marginal costs of production being incurred. His argument suggests that:

↳ MC = $0!

a. The public good, despite this characteristic, will be provided at the socially optimal level of output by the market. F

x doesn't happen

b. The public good should be provided at a price of (total cost of public good)/(total number of people in the community) with everyone contributing to the provision of the public good. F – not Samuelson's argument

c. The public good should be provided at a price of $0 per unit, but that at this price the market will not provide the public good.

d. The public good should be provided to additional users at a price of $0 per unit and that the market will underproduce the public good.

JUST FROM THE READING – EITHER YOU KNOW IT OR YOU DON'T

25. Richard Thaler is concerned that mortgages are so complicated that many people simply do not understand the financial commitments they are making when they take out a mortgage to purchase a home. He compares simple mortgages to more complex mortgages and suggests these choices are a bit like:

a. The choices one faces at a food cafeteria.

b. The rating system at ski hills.

c. The choices one faces when booking a cruise: do you want a room with a view, a room with a balcony, or a room with a porthole that does not open.

d. The choices we face when selecting a breakfast cereal.

Answer the **next two (2)** questions based on the following information:

Consider a market that can be described by the following equations where Q is the quantity of the good, MSB is the marginal social benefit, and MPC is the marginal private cost:

Market Demand: MSB = 200 - 4Q

Market Supply: MPC = 40 + 12Q MSC = 80 + 12Q

You are also told that the production of this good generates an externality cost of $40 per unit of the good.

NOT HARD

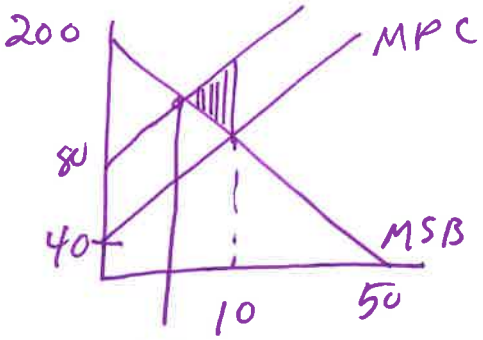
26. Given this information and holding everything else constant, what is the total externality cost when this market is in equilibrium and the externality is not internalized in the market?

a. ($40 per unit)(15 units)
b. (1/2)($40 per unit)(10 units)
c. ($40 per unit)(10 units)
d. ($40 per unit)(16 units)

NOT HARD

27. Given this information and holding everything else constant, the socially optimal amount of the good equals _____ and the value of the deadweight loss due to the externality when the externality is not corrected for is equal to ____.

a. 7.5 units; DWL = $50
b. 12.5 units; DWL = $100
c. 12.50 units; DWL = $50
d. 5 units; DWL = $100



#26. MSB = MPC to get Qmkt

$200 - 4Q = 40 + 12Q$

$160 = 16Q$

$10 = Q$

Total Ext Cost = ($40/unit)(10 units) = $400

#27 MSB = MSC to get Qsoc opt

$200 - 4Q = 80 + 12Q$

$120 = 16Q$

$\frac{120}{16} = Q$

$7.5 = \frac{30}{4} = Q_{soc\ opt}$ *

* Stop here → only 1 answer w/ this quantity

DWL = $\frac{1}{2}(10 - 7.5)(40)$

DWL = $20(2.5)$

DWL = $50

A LITTLE WORK- nice #'s

28. Consider a market for health care services that can be described by the following demand and supply curves where P is the price per health care service and Q is the number of units of health care services:

Demand for Health Care Services: Q = 400 - 2P

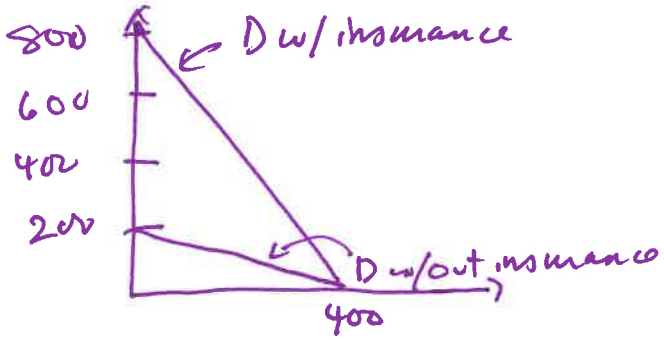
$2P = 400 - Q$
$P = 200 - \frac{1}{2}Q$

Supply of Health Care Services: Q = (1/4)P + 175

Then, suppose that this market is impacted by the arrival of health insurance companies that provide the following health insurance coverage to all the demanders in this market. In this market all the demanders have health care insurance and that results in demanders only having to pay 25% of the cost of their health care service.

Given this information and holding everything else constant, the demand curve with this insurance coverage can be written as _____ and the equilibrium price of a health care service will equal _____.

a. Q = 600 - (1/2)P; $700 per unit of health care services
b. Q = 400 - (2/5)P; approximately $346 per health care visit
c. Q = 500 - (1/2)P; approximately $433 per health care service
d. Q = 400 - (1/2)P; $300 per health care service ✓



D w/ insurance: $P = 800 - 2Q$
or $2Q = 800 - P$
$Q = 400 - \frac{1}{2}P$ *

* Stop here: only one answer w/ this equation

$400 - \frac{1}{2}P = \frac{1}{4}P + 175$

$\frac{3}{4}P = 225$

$P = 225\left[\frac{4}{3}\right] = 75[4] = 300$

SOME THOUGHT

29. Consider a sin tax that takes the form of an excise tax that is levied on producers of a good. This excise tax is equal to $X per unit of the good that is produced. Given this information and holding everything else constant, the sin tax will:

a. Either reduce consumption of this good if demand is relatively elastic or provide significant revenue to the government if demand is relatively inelastic. ✓
b. Either reduce consumption of the good if demand is relatively inelastic, or provide significant tax revenue for the government if demand is relatively elastic. X see diagrams below
c. Not decrease consumption of the good and will not provide significant tax revenue for the government. X
d. Reduce consumption of the good by significant amounts while also providing significant tax revenue for the government. X You get one or the other: see diagrams below

30. Pero and Mario are contemplating buying a house that costs $400,000. They plan to put down 20% of the house value as a down payment and then finance the rest of the purchase with a thirty year fixed payment mortgage. Given this information how many of the following statements are true?

I. Their down payment is equal to $8,000. XF Down payment is $80,000

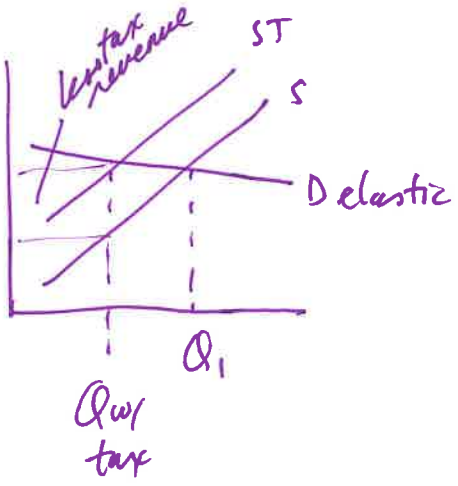
II. Should they be forced to sell the house in their first five years of ownership, they can weather a drop in housing prices of 20% and still come out of the transaction with positive net worth. T

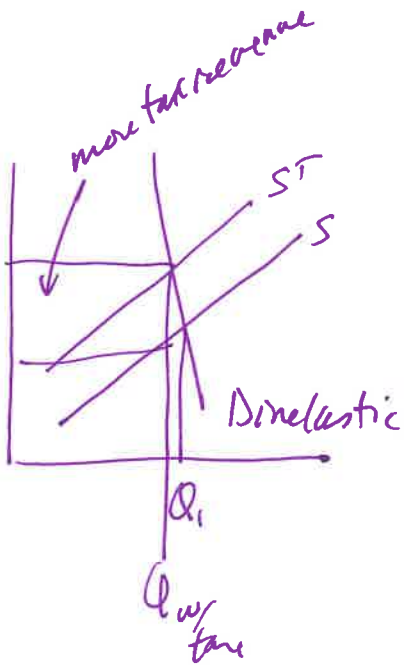
III. Given this scenario a drop in housing prices will reduce their net worth from their initial net worth when they took out the mortgage. T

IV. At the end of five years Pero and Mario will have paid back one sixth of the total amount they owe on the principal that they have borrowed. F

a. One statement is true.
b. Two statements are true.
c. Four statements are true.
d. Three statements are true.

#29.





Essays: 2 questions worth 10 points each

1. Write a short essay that identifies and defines two of the instincts that Hans Rosling discusses in his book **Factfulness**. After you define the instinct then include an original (not from the text) example to illustrate this instinct.

Grading Rubric:

Includes two well-defined instincts discussed in the text: 4 points

Examples included that support the explanation: 4 points

Overall quality: 2 points

2. In your own words explain the insurance death spiral and why the Affordable Care Act included an individual mandate to purchase health insurance. In your essay be sure to include the impact of asymmetric information on the concern about the insurance death spiral and the inclusion of the individual mandate.

Grading Rubric:

Explanation of insurance death spiral: 2 points

How asymmetric information impacts the individual mandate: 2 points

How asymmetric information contributes to the insurance death spiral: 2 points

Overall clarity, organization and expression in the essay: 4 points