

- 1) Which of the following is among the three types of environmental control costs that was discussed in Chapter 9 and in the class discussion of Box 1 of the 5- Box diagram?
 - a) Required add-on controls
 - b) Residuals impact on environmental quality (dispersion).
 - c) Process changes involving more costly but less damaging input substitutions.
 - d) Equity implications for firms.
 - e) Only a) and c) were among the costs discussed.
- 2) The hedonic method (e.g. property value studies or studies of wage differentials) is one approach to valuing environmental improvements. Which of the following is a *false* statement about this approach?
 - a) households must have poor perceptions of environmental damage and variations in environmental quality among locations.
 - b) one would expect rents to be higher in cleaner locations.
 - c) rent (or property value) variation and wage variation must be considered separately since they are alternative approaches.
 - d) one would expect wages to be lower in cleaner locations.
 - e) Only a) and c) are false.
- 3) In Box 1 of the 5 Box diagram, costs of environmental policy are evaluated. Which of the following is was argued to be true?
 - a) The dominant approach to environmental policy in the U.S. has been requiring siting requirements of major polluters.
 - b) Merely moving the same amount of pollution around is always inefficient.
 - c) A higher-cost more environmentally-damaging input into production can be required as a substitute for a lower-cost but less environmentally-damaging input.
 - d) The economic incentive approach (pollution taxes or salable emission rights) offers the largest cost saving over traditional command-and-control approaches when marginal costs of clean-up are identical for all firms.
 - e) None of the above are true.
- 4) Which, if any, of the following are true?
 - a) When accurately measured dollar costs exceed dollar benefits of a particular policy, we will always make society better off by adopting that policy, since cleaning the environment benefits all people equally.
 - b) Proper valuation of the environmental benefits that are captured by hedonic methods can be done in either the labor market or the land market separately.
 - c) Optimal environmental controls would generally be expected to cause the prices of goods whose production involves pollution to rise.
 - d) All of the statements are true.
 - e) Only a) and c) are true.

5) In Box 5 of the 5-Box diagram, it was argued in class that environmental policy as practiced in the U.S.:

- a) helps rich and poor equally, since we all breathe and drink the cleaner air and water.
- b) helps those with above average income more than those with below average income.
- c) has ignored equity impacts by income or race, hence little is known about who is helped or hurt by environmental policy as currently practiced.
- d) demonstrates greater concern for the human species than for other species.
- e) Only b) and d) are true.

6) Which, if any, of the following is *true* of the Sum of Specific Damages (SSD) approach to evaluating the benefits of environmental policies?

- a) SSD works best if the cause of damages are not perceived by households.
- b) SSD has uncertain values attached to the physical effects of concern.
- c) SSD has uncertain physical effects which are to be valued.
- d) SSD should ideally attempt to value only a subset of health effects.
- e) Only a), b), and c) are true of the Sum of Specific Damages approach.

7) Some discussion in class related to spatial impacts of environmental policy (Boxes 2 and 4). Which of the following best captures that discussion:

- a) We don't want to just move pollution around, we want to eliminate it.
- b) Fortunately, there is very little variation in marginal damages over space, hence uniform policies can generally be employed without loss of efficiency.
- c) Pollution should always be moved to where it does the least damage, regardless of cost.
- d) Variations in marginal pollution damages over space imply that policy stringency should vary over space, too.
- e) None of the above captures the important features of the spatial discussion.

8) For the hedonic method for valuing environmental improvements to work well, a number of conditions must hold. Which of the following is among those conditions?

- a) households must have good perceptions of environmental damage and variations in environmental quality among locations.
- b) there must be more people desiring a location in a good environment than there are locations possessing good environments.
- c) rent (or property value) variation and wage variation must be considered separately.
- d) there must be many bads, e.g. crime, that are omitted from the estimating equation and that are positively correlated with pollution.
- e) Only a) and b) are among the conditions required the hedonic method to work well.

9) Assume that Boulder City Council members enact legislation that benefits local firms and also benefits local residents. What can you most accurately say about what will happen to local wages and rents as a result of this legislation?

- a) Rents and wages will both fall.
- b) Rents and wages will both rise.
- c) Rents will rise and wages will fall.
- d) Rents will rise, but affect on wages is ambiguous.
- e) None of the above necessarily reflects what will happen.

10) If households are able to accurately perceive variation in environmental quality, and are aware of how much environmental quality benefits them, then the use value of environmental quality

- a) will be over-valued with the hedonic method.
- b) will be under-valued with the hedonic method.
- c) will be valued in an unbiased measure with the hedonic method.
- d) will be accurately captured, but non-use values could be higher.
- e) Only c) and d) are true.

11) The biggest single worry discussed in class about the survey, referenda, or experiment approaches (Constructed Markets) to environmental valuation was that:

- a) environmental attitudes might be elicited rather than the desired marginal willingness-to-pay.
- b) they do not reflect intensity of wants.
- c) perceptions of environmental values are too perfect under these approaches.
- d) income variation of respondents would make the values vary too much.
- e) none of the above was the biggest single concern about these approaches.

12) The travel cost method of valuing an environmental good might result in a bias that overstates its value when

- a) there are other environmental goods in the area being visited.
- b) people have an inability to properly perceive the value of the environmental good
- c) wage rates rise nationwide.
- d) gasoline rises in price causing fewer trips to an area.
- e) none of the above would lead to overstating the value of the environmental good.

13) It was argued in class that housing compensation for amenities and wage compensation for amenities should be added together because

- a) people first pick a labor market on the basis of wages, later hunting for a house.
- b) people first pick a house-type, later determining which labor market to buy in.
- c) it would be irrational to consider moving to a place without looking at both wage rates and property values.
- d) looking at either market separately will generally result in downward bias in valuing amenities, understating their importance.
- e) both c) and d) are correct.

14) In class, we discussed a difference between salable emission rights and pollution taxes, concluding that:

- a) salable emission rights result in certain environmental outcomes, but with an uncertain equilibrium price.
- b) salable emission rights result in uncertain environmental outcomes, but a certain equilibrium price.
- c) pollution taxes result in certain equilibrium price, but uncertain environmental outcomes.
- d) the ability to monitor emissions is critical to the ability to employ either salable emission rights or pollution taxes.
- e) Only a), c), and d) reflect conclusions discussed in class.

- 15) Firm A has a cost of cleanup of \$15/ton of pollution and Firm B has a cost of cleanup of \$30/ton. These are the only two firms in a region to become subject to environmental regulation. Each firm has received rights to pollute 60% of last year's pollution. What will happen?
- Firm B will buy rights to pollute from Firm A.
 - Firm B will sell rights to pollute to Firm A.
 - Each of the two firms will clean up 40%, since no mutually beneficial trades can occur in this case.
 - Emission rights would have to sell for more than \$15/ton but less than \$30/ton.
 - Both a) and d) are correct.
- 16) In the "baby certificate" example of population control (as with more general salable pollution rights), a central advantage over other control mechanisms was that:
- any individual family could have as many children as they wished, if they are willing to pay the price of a baby certificate.
 - all individual families were limited to exactly two children, out of concerns of fairness.
 - the baby certificate is itself an asset that could be used to redistribute income if desired.
 - the equilibrium price would ensure that each family would have exactly two babies .
 - both a) and c) are correct.
- 17) Of the following problems associated with the use of voting as a way to determine environmental policy, which was argued to be of *greatest* importance?
- The possibility of Voting Paradoxes (intransitive preferences) weakens the power of the agenda setter.
 - Complex environmental referenda are likely to be well understood due to rational voter desire to be fully informed.
 - Voting fails to correctly reflect intensity of wants, since those with high benefits are unable to express those benefits effectively.
 - "Marginal" voter power leads to known efficiency bias harming the environment.
 - None of the above was the central problem of concern with voting.
- 18) It was argued in class that the methods used in environmental economics to value benefits are best at ascertaining which of the following types of benefits:
- preservation values
 - option to use values.
 - bequest values.
 - use values.
 - All of the above values are well-estimated by the methods of environmental economics.
- 19) Which of the following methods have the best chance of working to reveal "preservation" values?
- Sum of Specific Damages methods.
 - Hedonic methods.
 - Travel Cost methods.
 - None of the above are good methods of revealing preservation values.

- 20) Which of the following are among the concerns discussed in class about constructed markets (surveys and interviews)?
- a) failure to reflect intensity of want.
 - b) starting point bias.
 - c) selectivity bias.
 - d) multiple trip destinations.
 - e) b) and c) are among the concerns with this method discussed in class.
- 21) Which of the following is not among the problems discussed in class with the use of the sum of specific damages approach to benefit estimation?
- a) all damage categories should be included, not just a subset of health damages.
 - b) those damaged must have perfect perceptions of what causes their damage.
 - c) values to be placed on the physical damages are uncertain.
 - d) physical damages are uncertain.
 - e) all of the above were brought up in class as potential problems with SSD.
- 22) If a location has an amenity which is good for firms relative to other locations *other things equal*, then one would expect, in equilibrium, to observe _____ wages and _____ rents in that location relative to other locations. Which answer properly fills in the blanks?
- a) higher, higher.
 - b) higher, lower.
 - c) lower, higher.
 - d) lower, lower.
 - e) Impossible to say in this case.
- 23) If a location has an amenity which is good for households relative to other locations *other things equal*, then one would expect, in equilibrium, to observe _____ wages and _____ rents in that location relative to other locations. Which answer properly fills in the blanks?
- a) higher, higher.
 - b) higher, lower.
 - c) lower, higher.
 - d) lower, lower.
 - e) Impossible to say in this case.
- 24) From an economist's perspective the lowest "quality-of-life" locations for households, *other things equal*, would be expected to have:
- a) higher wages.
 - b) lower rents.
 - c) lower wages.
 - d) higher rents.
 - e) both a) and b).

25) The methods of valuing environmental benefits presume that decision-makers are interested in the accurate measurement of those benefits. We discussed concerns in class suggesting that decision-makers might wish to systematically ignore certain benefits or costs, due to:

- a) faulty incentives due to political or jurisdictional problems.
- b) ignorance of decision-makers of the desires of their constituents.
- c) term-limited politicians not caring about their constituents.
- d) political desires to preserve environmental assets, rather than using them.
- e) both a) and d) were argued to be potential problems.

1) E 2) E 3) E 4) C 5) E 6) E 7) D 8) E 9) D 10) E 11) A 12) A 13) E 14) E
15) E 16) E 17) C 18) D 19) D 20) E 21) B 22) A 23) C 24) E 25) A