Econ 342: Practice Questions for Exam 1

I. Multiple Choice

1. Which of the following is NOT one of the steps to assessing the magnitude of pollution damage?
    a. Placing a monetary value on the physical damages
    b. Waiting for the affected parties to report their personal roles in the pollution damage
    c. Estimating the physical relationship between the pollutant emission and the damage caused to the affected categories
    d. Estimating responses by the affected parties toward averting or mitigating some portion of the damage

2. Which of the following component of total economic value of a resource is correctly identified?
    a. Use value reflects the value people place on a future ability to use the environment.
    b. Use value reflects the common observation that people are more than willing to pay for improving or preserving resources that they will never use.
    c. Option value is the direct use of the environmental resource.
    d. A pure nonuse value is also called existence value.

3. Which of the following is the most correct?
    a. Two economic methods for measuring environmental and resource valuation are benefit/cost analysis and revealed preference.
    b. There are direct methods and indirect methods for measuring environmental and resource values.
    c. Travel cost and conjoint analysis are both stated preference methods for measuring environmental and resource values.
    d. Contingent valuation and contingent ranking are both direct methods for measuring environmental and resource values.

4. Which of the following is NOT a potential bias when using the contingent valuation survey approach?
    a. Primary-secondary bias
    b. Strategic bias
    c. Hypothetical bias
    d. Starting-point bias

5. Which of the following correctly states the difference between the observed discrepancy between willingness to pay and willingness to accept?
    a. Respondents tend to report higher values for willingness to accept than willingness to pay.
    b. Respondents tend to report higher values for willingness to pay than willingness to accept.
    c. Respondents tend to report the same values for willingness to accept and willingness to pay.
    d. Policy-makers ignore this type of survey because of its unreliability.

6. When are indirect hypothetical methods of valuation useful?
    a. They are useful when project options have only one level of attributes.
    b. They are useful when project options have only multiple levels of very similar attributes.
    c. They are useful when project options have only one level of different attributes.
    d. They are useful when project options have multiple levels of different attributes.

7. Revealed preference methods are _____ because they involve actual behavior and _____ because they infer a value rather than estimate it directly.
    a. observable; direct
    b. observable; indirect
    c. unobservable; direct
    d. unobservable; indirect

8. What is a main value of using Geographic Information Systems (GIS) to enhance valuation?
    a. GIS allows the estimates for the site of interest to be based upon estimates from other sites.
    b. GIS provides measurements of the spatial structure of data and analytic results that can enrich our understanding of social and economic processes.
    c. GIS allows estimates for the site of interest to be based upon estimates from an earlier period.
    d. GIS uses multiple regression analysis to determine the environmental component of value in a related market.

9. What is the difference between static efficiency and dynamic efficiency?
    a. Static efficiency and dynamic efficiency are two names for the same thing.
    b. Static efficiency is useful for environmental policymaking while dynamic efficiency is not.
    c. Dynamic efficiency allows us to evaluate resource allocations across time periods while static efficiency looks at resource allocation where time is not important.
    d. Dynamic efficiency is useful for environmental policymaking while static efficiency is not.

10. Dynamic efficiency balances _____.
    a. present and future uses of a depletable resource
    b. past uses of depletable resources
    c. economic and environmental policy problems
    d. population problems

11. If the supply of a depletable resource is insufficient to cover demand in two time periods, how will the resource be allocated efficiently?
    a. The first (present) period would always get a higher allocation.
    b. The allocation between the two periods would maximize the present value of the net benefit received in the two-time periods.
    c. The second (future) period would always get a higher allocation.
    d. The allocation between the two periods would minimize the present value of the net cost incurred in the two-time periods.

12. Which of the following would NOT lead to an efficient allocation between two time periods?
    a. Maximize the present value of the net benefit received in the two-time periods.
    b. Maximize the present value of the marginal net benefit from the last unit in Period 1 equaling the marginal net benefit in Period 2.
    c. Try all combinations of allocations between the two periods and choose the one that maximizes net benefit between the two periods.
    d. Maximize the net benefit in Period 1 and allocate the remaining resources to Period 2.

13. Which of the following is true?
    a. The opportunity cost of intertemporal scarcity is called user cost.
    b. Intertemporal scarcity can be disregarded when determining dynamic efficiency.
    c. The opportunity cost of intertemporal scarcity is called marginal user cost.
    d. When resources are scarce, greater current use creates future opportunities.

14. The sustainability criterion _____.
    a. is the approach that makes present and future generations agree upon resource allocation
    b. suggests that, at a minimum, future generations should be left no worse off than current generations
    c. is not related to the concept of scarcity.
    d. means that current generations may not under any circumstance use resources that would therefore be denied to future generations

15. The "Hartwick Rule" depends on _____.
    a. the substitutability of physical capital and natural capital
    b. the goodwill of the future generation
    c. the substitutability of different forms of physical capital
    d. the maintenance of physical flows of certain key individual resources

16. Which one of the following provides the correct definition?
    a. Current reserves are known resources that can profitably be extracted at current prices.
    b. Potential reserves are the natural occurrence of resources in the earth's crust.
    c. Resource endowment is the amount of reserves available depending upon the price people are willing to pay for those resources.
    d. Current reserves are known resources that can be extracted.

17. Resources in which there is natural replenishment at a non-negligible rate are called _____.
    a. environmental resources
    b. depletable resources
    c. recyclable resources
    d. renewable resources

18. Some examples of renewable resources are _____.
    a. copper wiring, aluminum, paper, and glass
    b. solar energy, water, fish, forests, and animals
    c. coal and wood
    d. copper wiring, solar energy, and coal

19. When you assume that the marginal cost of extraction is constant, the value of marginal user cost rises over time. Why?
    a. The marginal cost of extraction pushes up the value of marginal user cost.
    b. There are more users of the resources over time.
    c. As a resource is depleted, its value increases due to scarcity.
    d. Producers refuse to pay more than the current marginal extraction cost.

20. Total marginal cost equals _____.
    a. the sum of total extraction cost and total user cost
    b. the sum of marginal extraction cost and total user cost
    c. the sum of marginal extraction cost and marginal user cost
    d. the sum of total extraction cost and marginal user cost

21. Which of the following is true?
    a. An industry would transition to a renewable resource regardless of cost when public opinion decided "green was good".
    b. An industry would transition to a renewable resource when the marginal user cost of the renewable resource was less than the choke price.
    c. An industry would transition to a renewable resource when the marginal cost of the renewable resource was more than the choke price.
    d. An industry would transition to a renewable resource when the total marginal cost of the renewable resource was less than the total marginal cost of the depletable resource.

22. If the marginal cost of extracting the depletable resource rises with the cumulative amount extracted _____.
    a. marginal user cost can be ignored
    b. marginal user cost declines over time
    c. marginal user cost increases over time
    d. opportunity cost increases over time

23. Which of the following will NOT increase efficiency in markets for resources?
    a. Appropriate property right structures
    b. Profit-maximizing producers who consider both the present and the future
    c. Producers who are solely concerned with present profit maximizing
    d. The property rights of exclusivity, transferability, and enforceability

24. Which of the following forms the bridge between environmental economics and natural resource economics?
    a. Marginal costs
    b. Environmental costs
    c. Net benefit
    d. Market allocation

25. Which of the following (a-c) is **not** an example of nonuse value?
    a. The value of a river to a recreational fisherman who practices catch-and-release fishing.
    b. The value of a forest to a birdwatcher.
    c. The value of dolphins to commercial fishermen, who don't harvest the dolphins but use the dolphins to locate fish that they do catch.
    d. none of the above (a-c) are examples of nonuse value.

26. Complete this sentence.
    The hedonic property value approach can be used to place a value on pollution damages in an urban setting because _____
    a. holding all else equal, property values tend to be lower in polluted neighborhoods.
    b. people tend to be hedonistic.
    c. pollution makes the workplace riskier so workers in urban areas must be paid a higher wage.
    d. pollution makes people wash their homes more often, which is an expensive activity.

27. Identify the **best** ending of this definition
    Economic valuation of an environmental service is _____
    a. the set of accounting principles for economic activities that are derived from the environmental service.
    b. the process of estimating the amount that members of society would be willing to pay for the environmental service.
    c. the process of determining the value of the jobs that rely on the environmental service.
    d. the assessment of the moral and ethical values that people place on the environmental service.

28. Which of the following (a-d) **is NOT** a correct statement about the contingent valuation method (CVM)? If a-d are all correct, choose e.
    a. CVM studies are relatively straightforward since they directly ask respondents about their willingness to pay.
    b. Because CVM studies use surveys to estimate the values that people place on environmental services, it is called a *revealed preference* method.
    c. CVM studies have been criticized because of the potential for bias.
    d. The name contingent valuation comes from the idea that the method involves a hypothetical market and then considers a respondents willingness to pay *contingent* on the existence of that market.

29. Which of the following is often referred to as the 'hedonic price' method for valuing environmental assets?

    a. Using 'existence value' to estimate the value of an environmental asset.
    b. Using 'willingness to pay' to value an environmental asset
    c. Using travel costs to estimate the value of an environmental asset.
    d. Using linkages between variations in house prices and geographical proximity to an environmental asset.

30. Which of the following is the best description of the preferred economic approach to place a value on environmental improvements that could save people's lives.

    a. The economic approach finds out how much people are willing to pay to reduce the probability of death by a small proportion, and then uses that value to estimate the environmental change considered.
    b. The economic approach calculates the expected lifetime earnings of an individual and then, using that figure, calculates the value of keeping a person alive.
    c. The economic approach calculates the costs of medical treatment and burial of a person. Since that money would be saved with the environmental improvement, those values are used to calculate the value of the environmental improvement.
    d. There is no correct economic approach to valuing lives since such a practice is ethically indefensible.

II. *Define and explain*:

Use value

Nonuse Value

Total willingness to pay

Revealed preference method

Stated preference method

Dynamic efficiency criterion

Marginal user cost

Weak sustainability

Strong sustainability

Renewable resource

Depletable resource

Recyclable resource

Strategic bias

Information bias

Starting point bias

Hypothetical bias

III. Problems

1. In the in-class assignment for chapter 5, we looked at a case where, the inverse demand function for the depletable resource is P = 11 – q and the marginal cost of extracting it is $1 per unit. The total supply of this resource is 10 units. The discount rate is 50%.

   a. What is the optimal allocation if the discount rate decreases to 20%.

Answer:

$$\mathbf{q_1 = 5.46}$$
$$\mathbf{q_2 = 4.53}$$

   b. Explain in words the reasoning behind the different optimal allocation for q1 and q2 (compared to when R = 50%) due to the decrease in the social discount rate.

   c. Suppose the discount rate is still 20%, but a population increase occurs in period 2. The demand is now P = 16-Q in period 2. Calculate the optimal resource allocation between the periods. Explain the outcome relative to the answer in part (a).

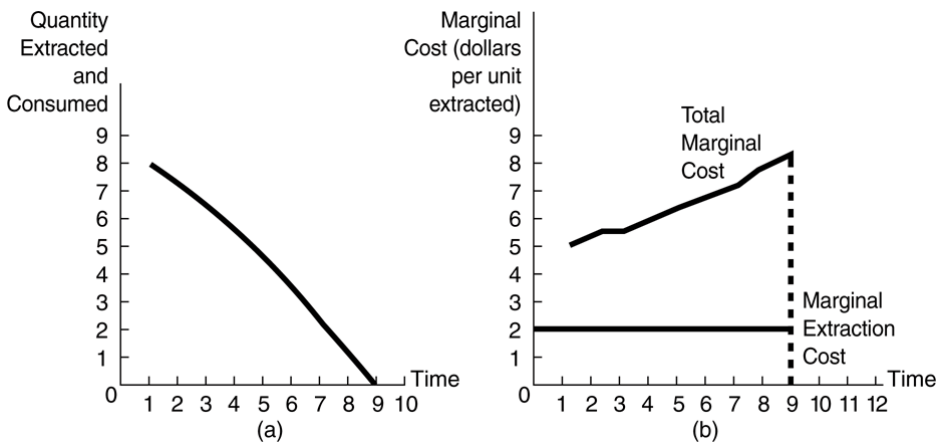
Answer:

$$\mathbf{q_1 = 3.18}$$
$$\mathbf{q_2 = 6.82}$$

   d. Explain in words the reasoning behind the optimal allocation for q1 and q2 in this case. What is happening here?

2. Consider a constant marginal-cost depletable resource with **NO** substitute resource, given by these equations:

$$P = 8 - 0.4q$$
$$MC\ of\ extraction = \$2$$
$$R = 10\%$$
$$Q = 40$$



a. Describe, in general terms, the dynamically efficient time path for **(i) marginal extraction cost (ii) marginal user cost; and (ii) quantity extracted** based on the graph above.

b. Suppose the discount rate increases from 10% to 15%. Describe the dynamically efficient time path for **(i) marginal extraction cost (ii) marginal user cost; and (ii) quantity extracted** for R = 15%.

3. Assume that the data you have suggests that if:

   i. Travel cost is greater than or equal to $15, no trips are taken.
   ii. If travel costs are zero, 100 trips are taken.

   a. Draw a travel cost demand curve based on these data.
   b. Calculate ordinary consumer surplus for the individual whose travel costs are equal to $5.

Answer:

$333.33