**Final Exam**

(Environmental economics: 1025 and 1026)

1. What is the meaning of economic efficiency? Show graphically and explain.
2. How can affect technological developments to the Production Possibility Frontier (PPF)? Explain and show graphically.
3. What is the accumulative and non-accumulative pollutant? Explain, show graphically and bring examples.
4. Production Possibility Frontier (PPF) and Community Indifference Curve (CIC). Show graphically and explain (assume that axis is“goods” and axis is a “environmental quality”).
5. Assume that the axis is a “goods” and axis is a “environmental quality”. Utilitiy function of society: and Production Possibility Frontier(PPF): (). Find the optimal solution of “goods” and “environmental quality”
6. Willingness to Pay (WTP) and demand curve. What is the different between them? Explain each one and show graphically (linear and non-linear WTP).
7. What happens to aggregate demand and supply curves when the price of the goods to rise in the future? Draw graphs and explain each step.
8. What happens to aggregate demand and supply curves when the price of the goods to fall in the future? Draw graphs and explain each step.
9. Narmin’s demand for bottled water is given by the equation. Garib’s demand function is . Calculate Narmin and Garib’s marginal and total willingness to pay (TWTP) for four bottles of water, illustrate graphically and explain.
10. Elshan’s demand for pizza is given by the equation. Arzu’s demand function is . Compute the aggregate demand function for pizza. Derive the aggregate demand curve if there were twenty people with Elshan’s demand curve and fifteen people like Arzu.
11. Assume that marginal cost curve of environmental projects are given.

**A:** **B**:

1. Derive and graph the aggregate supply curve for both project;
2. If a technological change shifts producers marginal cost curve \*\*\* units, compute cost saving for A at
3. Let and. Draw graphs and find the net social value.
4. Negative externality of Production (an external cost). Show graphically and explain.
5. Negative externality of Consumption (an external cost). Show graphically and explain.
6. Positive externality of Production (an external benefit). Show graphically and explain.
7. Positive externality of Consumption (an external benefit). Show graphically and explain.
8. Linear and non-linear marginal abetement cost functions. Show graphically and explain.
9. Let and Find the net social cost at the initial emission level.
10. Let and Find the net social gain at the intersection point of marginal abatement costs and marginal damages.
11. Let and. Find the aggregate (total) abatement cost function(s) and draw graphs.
12. Why society wants to maximize net social value when choosing a target level of pollution. Discuss.
13. Are low interest rates () “good” or “bad” for the environment? Defend your argument.
14. Assume that costs for environmental project is given

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| --- | --- | --- | --- | --- | --- |
| Cost (million $ in a year) | | | | | |
| ***0*** | ***1*** | ***2*** | ***3*** | ***4*** | ***5*** |
|  |  |  |  |  |  |

1. If company wants to pay today’s costsafter years (the interest rate is %) How many dollars you will pay?
2. If you want to pay second year costs, how many dollars you need today?
3. Assume that costs and benefits for environmental project is given

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cost (million $ in a year) | | | | | | Benefit (million $ in a year) | | | | | |
| ***0*** | ***1*** | ***2*** | ***3*** | ***4*** | ***5*** | ***0*** | ***1*** | ***2*** | ***3*** | ***4*** | ***5*** |
|  |  |  |  |  |  |  |  |  |  |  |  |

1. Calculate the present value of your second year benefits.
2. Calculate the net benefit for years and discuss your answer.
3. Assume that,, and . If the ***environmental cost*** ***shifts one unit***, in which period the quantity of supply will be zero? Draw the quantity and the marginal cost graphs.
4. Assume that,, and . In which period the quantity of supply will be zero? Draw the quantity and the marginal cost graphs.
5. Assume that,, and . Also assume that the ***marginal cost of renewable resource*** is \*\*\*. Find the chock prices and draw the quantity and the marginal cost graphs.
6. Assume that,, and . In which period the quantity of supply will be zero? Draw the quantity and the marginal cost graphs.
7. Assume that,, and . Also assume that the ***marginal cost of renewable resource*** is \*\*\*. Find the chock prices and draw the quantity and the marginal cost graphs.
8. Assume that, and marginal cost is constant at $\*\*\*per unit. Find the ***optimal allocation*** of the quantity.
9. Assume that, and marginal cost is constant at $\*\*\* per unit. We need to allocate supply of a depletable resource between two periods. If consumption of the first period is nine units, find the ***future value of net benefit*** at period one and two also draw graphs.
10. Assume that, and marginal cost is constant at $\*\*\* per unit. We need to allocate supply of a depletable resource between two periods. If consumption of the first period is \*\*\* units, find the ***present value of net benefit*** at period one and two also draw graphs.
11. Weak, strong and environmental sustainability. Explain each one.
12. Environmental impacts of World Natural Gas Production (describe the general situation).
13. Environmental impacts of World Natural Gas Consumption (describe the general situation).
14. Environmental impacts of World Natural Gas Trade and Prices (describe the general situation).
15. Environmental impacts of Natural Gas Production in Azerbaijan (describe the general situation).
16. Environmental impacts of Natural Gas Consumption and Trade in Azerbaijan (describe the general situation).
17. Environmental impacts of World Crude Oil Production (describe the general situation).
18. Environmental impacts of World Crude Oil Consumption (describe the general situation).
19. Environmental impacts of World Crude Oil Trade and Prices (describe the general situation).
20. Environmental impacts of Crude Oil Production in Azerbaijan (describe the general situation).
21. Environmental impacts of Crude Oil Consumption and Trade in Azerbaijan (describe the general situation).
22. Assume that ***fishery has property right*** to use the river. Let chemical company pays \*\*\*$ per ton to the fishery. If and . Find the ***total and net gain for fishery***.
23. Assume that ***fishery (chemical company) has property right*** to use the river. If and . Find the ***max value of*** ***net gain for chemical company (fishery).***
24. Assume that ***fishery has property right*** to use the river. If and . Find the ***total damage for fishery*** and ***total gain for chemical company*** at the social efficient point
25. Assume that ***fishery has property right*** to use the river. If and . Find the ***for chemical company*** and ***total gain for fishery*** at social efficient point.
26. Assume that ***chemical company has property right*** to use the river. Let fishery pays \*\*\*$ per ton to the fishery. If and . Find the ***total damage*** and ***total gain*** ***for fishery*** at point \*\*\*.
27. Assume that ***chemical company has property right*** to use the river. Let fishery pays \*\*\*$ per ton to the fishery. If and . Find the ***total gain for chemical company*** and ***total cost for fishery.***
28. Assume that ***chemical company has property right*** to use the river. If and. Find the ***TAC for chemical company*** and ***net gain for fishery*** at the social efficient point.
29. Assume that ***chemical company has property right*** to use the river. If and. Find the ***total damage for fishery*** and ***net gain for chemical company*** at the social efficient point.
30. Type of standards. Explain and give an example
31. What kind of standard(s) would you recommend for Azerbaijan? Why? Explain.
32. Let and . Calculate the ***maximum value of net social gain***.
33. Let and If standard is \*\*\* tons, calculate ***the net social gain***
34. Let, and emission standard is \*\*\* tons.Apply uniform standard and find the sum of TAC for both firm
35. Let, and emission standard is \*\*\* tons. Apply cost-effective individual standard and find the sum of TAC for both firm
36. The tax approach and emission standards. Explain each one.
37. Why wouldn’t the polluter (firm) simply disregard the tax, continue to pollute the way it has been, and just pass the tax on to consumers in the form of higher prices?
38. Let and. Government applies the tax rate of \*\*\*$ per ton. Calculate net social benefit and total abatement cost
39. Let and. Government applies the tax rate of \*\*\*$ per ton. Calculate ***total tax bill***
40. Let and. Government applies the tax rate of \*\*\*$ per ton. Calculate ***total private cost***.
41. Let and . Government applies the tax rate of \*\*\*$ per ton and ten tons of emissions ***free of tax***. Calculate ***total tax bill***.
42. Let and . Government applies the tax rate of \*\*\*$ per ton and ten tons of emissions ***free of tax***. Calculate ***total private cost***
43. Let and . Government applies the tax rate of \*\*\*$ per ton and ten tons of emissions ***free of tax***. Calculate net social benefit and total abatement cost
44. Let and. If tax per kilogram of emission is \*\*\*$, and emission standard is \*\*\* tons, calculate and compare:
45. (Emission Standard)
46. (Emission Tax)
47. Maximum sustainable yield of a fishery. Derive mathematically and explain economic meaning. Also, find the profit at this point. (Hint: assume that TR and )
48. Efficient sustainable yield of a fishery. Derive mathematically and explain economic meaning. Also, find the profit at this point. (Hint: assume that TR and )
49. Open access equilibrium level of a fishery. Derive mathematically and explain economic meaning. Also, find the profit at this point. (Hint: assume that TR and )
50. Assume that the relationship between the growth of a fish population and the population size can be expressed as , where is the growth in kilograms and is the size of the population. If fish’s price is \*\*\*$ for one kilogram and the total cost is , find the maximum sustainable yield and profit at this point
51. Assume that the relationship between the growth of a fish population and the population size can be expressed as , where is the growth in kilograms and is the size of the population. If fish’s price is \*\*\*$ for one kilogram and the total cost is , find the efficient sustainable yield and profit at this point
52. Assume that the relationship between the growth of a fish population and the population size can be expressed as , where is the growth in kilograms and is the size of the population. If fish’s price is \*\*\*$ for one kilogram and the average cost is five dollars, find the open access equilibrium level and profit at this point
53. What is the different between an open-access fishery and a common property fishery?
54. Stable and unstable points of fishery. Draw graph and explain the meaning of each point.
55. Let growth function of fish population is given by function of. If fish stocks are \*\*\* tons and catch level of fish stocks are \*\*\* tons (after growth), find the maximum fish stocks after years.