

Exam SØK1101 Environmental and resource economics, fall 2023

The exam consists of three questions and all three should be answered. In the grading the questions will be given equal weight. Good interpretations and understanding will count positively on all questions.

Question 1

- a) What is meant by the term externality? Provide examples of externalities.
- b) How do negative externalities affect total economic surplus?
- c) Consider a case where the demand curve is given by $P = 100 - 2Q$, where P is price and Q is quantity. Private marginal costs are given by $10 + Q$. The production of the good pollutes the environment and the marginal externality is Q . Calculate the market equilibrium, the efficient solution, and the increase in total economic surplus by moving from the market equilibrium to the efficient solution.

Question 2

- a) What are the three types of values associated with an environmental resource?
- b) Discuss different valuation methods for environmental resources.
- c) Give a critical discussion of the following claim: "It is impossible and not desirable to put a monetary value on environmental resources."

Question 3

Consider two countries (A and B) that in a meeting has agreed on a target for emission of greenhouse gases. After the meeting the countries are contemplating whether to meet the target or emit the same as before. If they both meet the target, the payoff is 10 to each of them. If both choose the same as before, the payoff is 5 to each of them. If one chooses a high amount and the other low, the payoff is 15 for the country emits the same as before and 0 for the country that meets the target.

- a) Display the game in a payoff matrix and explain why the payoffs may exhibit this pattern.
- b) What is the optimal solution for countries A and B combined? Why is this not an equilibrium in a one period game?
- c) What is the equilibrium outcome in a one period game? Why is this not optimal for the two countries?

- d) Could the outcome be different if there were multiple years?
- e) Discuss possibilities for enforcing a binding agreement.