

LAIKIPIA



UNIVERSITY

UNIVERSITY EXAMINATIONS

1ST SEMESTER 2023/2024 ACADEMIC YEAR

FOURTH YEAR EXAMINATION FOR THE DEGREE
OF BACHELOR OF SCIENCE IN ECONOMICS AND
SOCIOLOGY

ECON 434: ENVIRONMENTAL ECONOMICS

STREAM:

TIME: 2 HRS

DAY: FRIDAY [14.30-16.30 P.M]

DATE: 15/12/2023

THIS QUESTION PAPER CONSISTS OF THREE (3) PAGES

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INSTRUCTIONS:

Answer question ONE, and any other TWO questions. Question one carries 30 Marks and all other questions carry 20 Marks each.

QUESTION ONE (30 marks)

- a) Briefly describe the following valuation methods and their limitations as used in environmental economics;
- i) Contingent Valuation methods (CVM); **(2 marks)**
 - ii) Travel Cost methods; **(2 marks)**
 - iii) Hedonic Pricing Methods. **(2 marks)**
- b) Most environmental degradation problems can be traced back to imperfectly defined property rights. Using relevant examples discuss this statement. **(4 marks)**
- c) Suppose that an environmental regulatory authority introduces a requirement that all polluting firms reduce their pollution by 20 per cent even though the cost of pollution varies widely from one polluter to another. Using an illustrative example, explain why this regulation might be inefficient and briefly discuss an alternative policy approach that would be more efficient. **(10 marks)**
- d) A pollution regulating authority can use different instruments to implement chosen targets of pollution levels. Which instrument to use are often decided dependent of criteria like efficiency and distributional effects. A polluting activity has the following total damage function $TD = 100 + 2M^2$ and total abatement cost function $TAB = 300 + 60M - M^2$, where M is the flow (quantity) of emission per period.
- i) Which level of pollution flow is chosen by an unregulated activity and which is the social efficient one? **(7 marks)**
 - ii) Illustrate your solution in a diagram. **(3 marks)**

QUESTION TWO (20 marks)

- a) John is a farmer who uses some pesticides in his farm. James stays downstream and his health is adversely affected by John's use of the pesticides. Explain with an aid of a diagram how they can bargain, to a pareto optimal equilibrium, the possible solutions given different initial property rights. **(5 marks)**
- b) The economic approach to environmental problems starts from the assumption that resource allocation is done via markets and market prices. In the presence of environmental problems, markets 'fail'. Explain the reason and nature of market failures related to environmental problems. **(5 Marks)**
- c) Discuss any five measures that can be undertaken to correct environmental market failures. **(10 marks)**



QUESTION THREE (20 marks)

- a) Explain the concept of free rider problem. **(4 marks)**
- b) Discuss instances when private provision of a public good is likely to overcome the free rider problem. **(6 marks)**
- c) Economists have derived a method for evaluating different proposals/ methods to deal with environmental problems, called Cost-benefit analysis (CBA).
- i) State the basic premises of Cost-benefit Analysis (CBA); **(4 marks)**
- ii) Explain three methods derived to measure cost and benefit, particularly in situations where there are no observable market prices. **(6 marks)**

QUESTION FOUR (20 marks)

- a) Every time my neighbor cooks on his outdoor grill, fumes come into baby Liam's bedroom through the window and this upsets me. The National Environment Management Agency does not regulate smoke from grills.
- i) What would Coase recommend as a solution to the above problem? **(5 marks)**
- ii) How does this solution differ from what Pigou would recommend? **(5 marks)**
- b) Direct regulation, or command-and-control policies, have been popular with regulators and also (relatively speaking) with the regulated firms. However, economists have long pointed out that they have certain drawbacks compared to alternative solutions to an environmental problem. Discuss the drawbacks related to command-and-control policies. **(10 marks)**

QUESTION FIVE (20 marks)

- a) Discuss cost effectiveness as a criterion for choosing instruments in environmental policy. **(10 marks)**
- b) 'Economic growth has historically provided a valuable vehicle for raising the standard of living. Now that the standard of living is high, further economic growth is unnecessary. However, when the undesirable side effects are considered, it is probably counterproductive. Therefore, *economic growth is a process that has outlived its usefulness.*' With relevant examples, discuss this statement. **(10 marks)**

