



22116302



**ENVIRONMENTAL SYSTEMS AND SOCIETIES  
STANDARD LEVEL  
PAPER 2**

Monday 23 May 2011 (afternoon)

2 hours

Candidate session number

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Examination code

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**INSTRUCTIONS TO CANDIDATES**

- Write your session number in the boxes above.
- Do not open this examination paper until instructed to do so.
- Section A: answer all questions. Refer to the resource booklet which accompanies this question paper.
- Section B: answer two questions.
- Write your answers in the boxes provided.



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**SECTION A**

Answer **all** questions. Write your answers in the boxes provided.

The resource booklet provides information on the country of Sweden. Use the resource booklet and your own studies to answer the following.

1. (a) (i) With reference to Figure 3, identify which **two** regions have the highest levels of nitrates and phosphates. [1]

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- (ii) With reference to Figure 1(b) and Figure 2, suggest **two** reasons for your answer in part (a)(i). [2]

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- (b) (i) Define the term *eutrophication*. [1]

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- (ii) Explain how eutrophication is an example of positive feedback. [2]

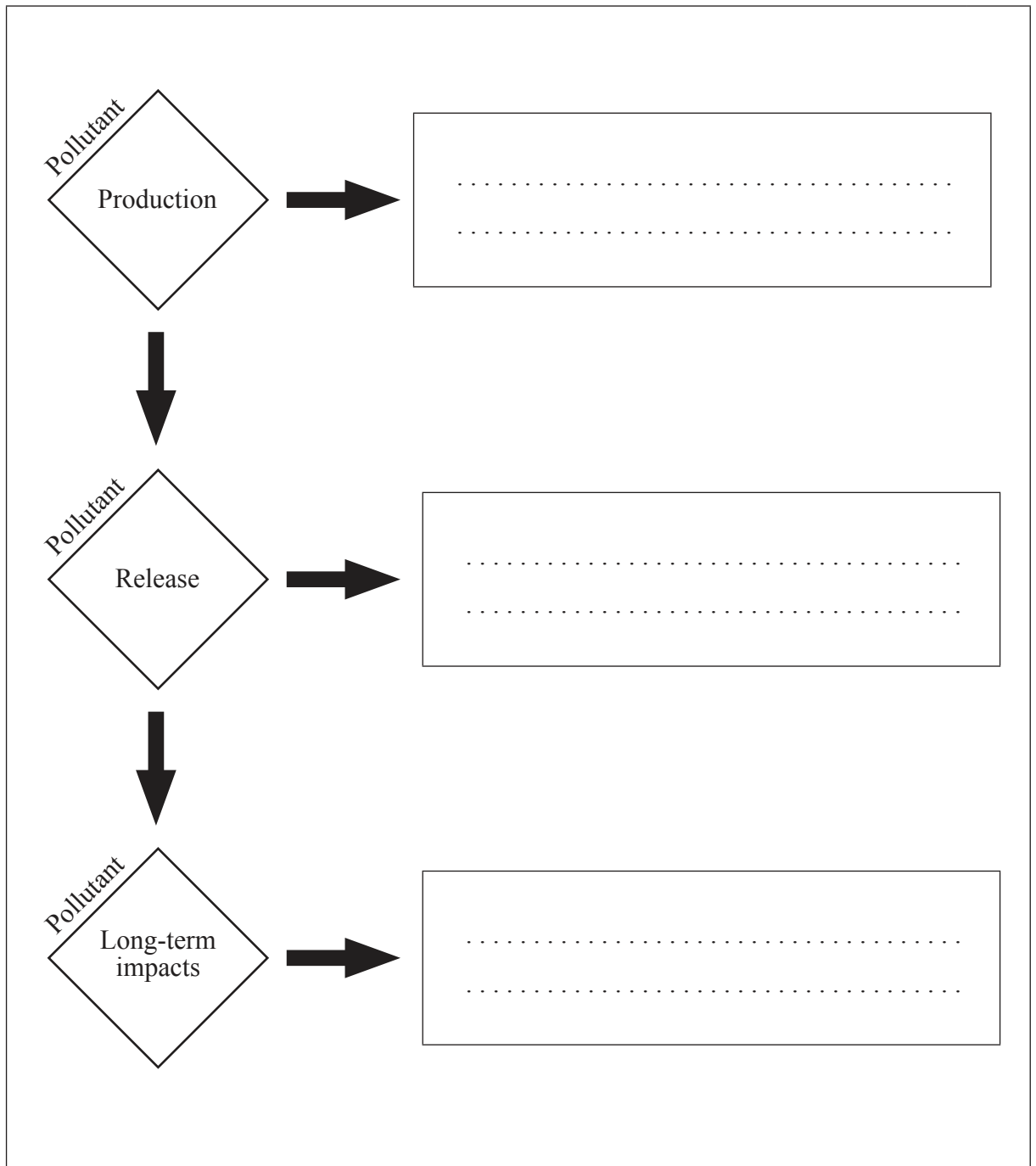
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(This question continues on the following page)



(Question 1 continued)

(iii) Annotate the diagram below to show **three** possible strategies for reducing the impacts of eutrophication in Skåne. [3]



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*(Question 1 continued)*

- (c) (i) With reference to Figure 7, describe the relationship between soil type and abundance of the Common Spadefoot Toad. [1]

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- (ii) With reference to Figure 5, suggest a reason why Common Spadefoot Toads prefer these habitats. [1]

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- (d) With reference to Figure 4, state and evaluate the approach that the Kristianstads Vattenrike Biosphere Reserve has taken towards conservation. [3]

Approach:

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Evaluation:

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*(Question 1 continued)*

- (e) Evaluate the hypothesis that ozone has affected the Common Spadefoot Toad population. Justify your response using data from Figure 5, Figure 6 and Figure 9. [3]

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- (f) (i) With reference to Figure 8, calculate the number of known amphibian species which are classified as endangered and critically endangered. [1]

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- (ii) Suggest **two** reasons why the actual total number of amphibian species on Earth may not be known. [1]

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- (iii) State **two** factors used to determine the Red List conservation status of a species. [1]

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(Question 1 continued)

- (iv) State an economic, an ecological and an ethical argument for the preservation of species diversity. [3]

Economic:

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Ecological:

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Ethical:

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- (g) Discuss **two** ways in which global warming may have an effect on the ecosystems of Skåne. [2]

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**SECTION B**

Answer **two** questions. Write your answers in the boxes provided.

Each essay is marked out of [20] of which [2] are for clarity of expression, structure and development of ideas:

- [0] Quality of expression, structure and development is poor.
- [1] Quality of expression, structure and development is limited.
- [2] Quality of expression is clear, structure is good and ideas are well developed.

2. (a) Define the term *pollution*, and distinguish between point source and non-point source pollution. [4]
- (b) Explain how different types of atmospheric pollution may have negative effects on terrestrial ecosystems. Refer to at least **two named** atmospheric pollutants in your answer. [6]
- (c) Evaluate the role of reducing, reusing and recycling strategies in the management of atmospheric pollutants. [8]
- Expression of ideas* [2]

3. (a) Define the term *biodiversity*, and explain how species diversity for an area may be calculated. [4]
- (b) Identify the ways in which unsustainable agricultural practices may lead directly **and** indirectly to a loss of biodiversity. [5]
- (c) Evaluate the relative importance of factors that determine the sustainable use of freshwater resources. Refer to at least **one** case study in your answer. [9]
- Expression of ideas* [2]



- 4. (a) Outline how soil degradation can be caused by human activities. [5]
- (b) Explain the importance of soil organisms in ecosystems. [5]
- (c) Evaluate the anthropocentric view that it is important for everyone in society to participate in environmental decision-making. Discuss **one** example of the successful involvement of communities in solving environmental problems. [8]

*Expression of ideas* [2]

- 5. (a) Outline the factors which are likely to lead to reductions in human population growth rates. [4]
- (b) Discuss why some of the effects of global warming may be seen as beneficial to human societies. [6]
- (c) Discuss, with reference to **two** contrasting environmental problems, the technocentric belief that technology may provide solutions to environmental problems. [8]

*Expression of ideas* [2]

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1116

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1316

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