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International Baccalaureate®
Baccalauréat International
Bachillerato Internacional

ENVIRONMENTAL SYSTEMS AND SOCIETIES
STANDARD LEVEL
PAPER 2

Candidate session number

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Thursday 7 November 2013 (afternoon)

Examination code

8	8	1	3	–	6	3	0	2

2 hours

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.
- A calculator is required for this paper.
- The maximum mark for this examination paper is *[65 marks]*.

14 pages
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SECTION A

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

The resource booklet provides information on Lake Naivasha in Kenya. Use the resource booklet and your own studies to answer the following.

1. (a) (i) With reference to Figure 1(b) and Figure 3, identify **two** ecosystems in the Naivasha area. *[1]*

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(ii) With reference to Figure 3, state the names of **two** non-native species in Lake Naivasha. *[1]*

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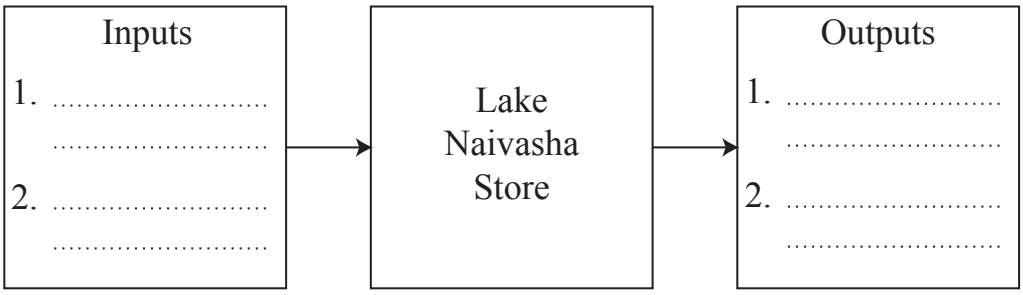
(b) Label the diagram below to show water flows into and out of Lake Naivasha. *[2]*



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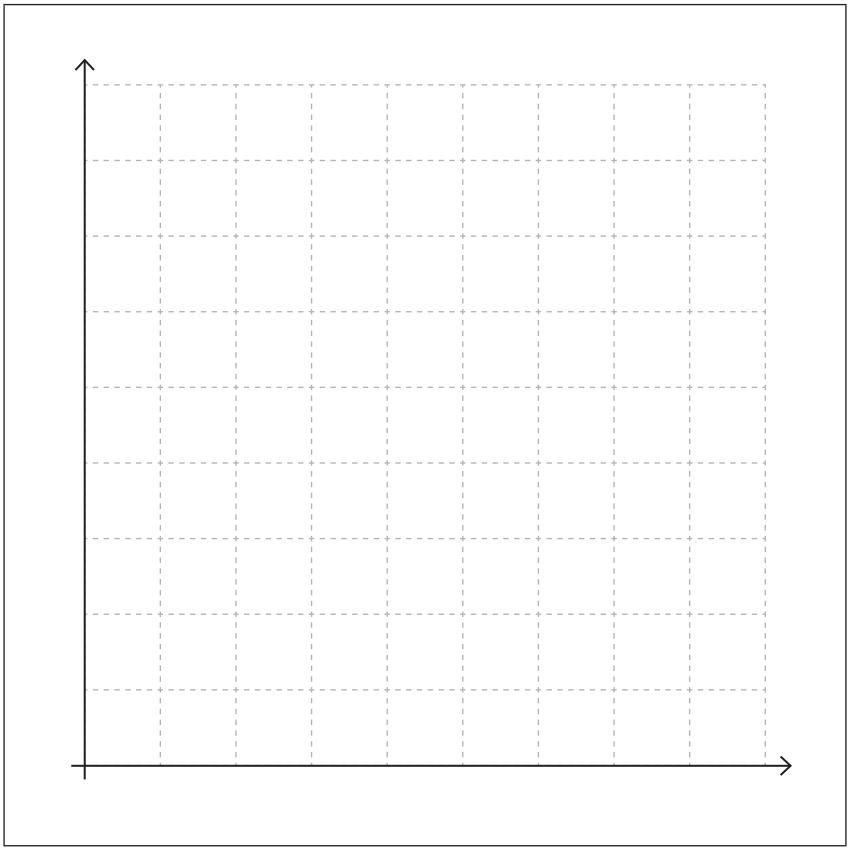
(Question 1 continued)

(c) (i) Using the data in Figure 6, draw a line graph to show the increase in the population of the Naivasha area between the years 1969 and 2009. *[2]*



(ii) Outline **two** ways in which the increase in population in Naivasha has caused soil degradation. *[1]*

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(Question 1 continued)

(d) (i) With reference to Figure 2, calculate the percentage of Kenya's electricity supply currently accounted for by renewable energy sources. *[1]*

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(ii) Evaluate the effects of expanding the geothermal plant at Ol Karia. *[4]*

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(e) With reference to Figure 9 and Figure 4,

(i) State why data was collected at the Crescent Island Nature Reserve. *[1]*

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(Question 1 continued)

(ii) Outline why water transparency data was collected 2m from the water hyacinth plants. *[1]*

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(iii) Suggest **two** reasons for lower water transparency levels at some of the test sites. *[2]*

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(f) Identify **two** factors that may cause changes in lake temperature over time. *[2]*

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(g) In a survey of local people most identified the flower farm as the biggest source of water pollution in Lake Naivasha. With reference to Figure 9, deduce whether they are correct. *[2]*

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(Question 1 continued)

(h) (i) With reference to Figure 8, explain how the measures taken by the Lake Naivasha Riparian Association (LNRA) are leading to more sustainable use of water resources. *[3]*

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(ii) Justify whether the approach of the LNRA is best described as that of a Deep Ecologist, Self-reliant Soft Ecologist, Environmental Manager or Cornucopian. *[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) Describe the methods that may be used to record changes in a **named** ecosystem as a result of human activities. *[4]*

(b) Explain human effects on the nitrogen cycle and predict the impact of these changes on an ecosystem. *[6]*

(c) Evaluate the role and possible outcomes of Environmental Impact Assessments (EIA) in **two** different societal structures. *[8]*

Expression of ideas *[2]*

3. (a) List **four** examples of natural income in a **named** protected area. *[2]*

(b) Analyse the role of natural income in the sustainable management of a **named** protected area. *[8]*

(c) Using **named** examples, discuss the impact of intergovernmental and non-governmental organizations on the preservation of ecosystems. *[8]*

Expression of ideas *[2]*

4. (a) Outline how crustal plate activity has created habitat and species diversity on Earth. *[4]*

(b) Compare and contrast the role of carrying capacity in determining the population size in humans and one other species. *[6]*

(c) Evaluate how your own and one contrasting environmental viewpoint might approach the problem of the depletion of a **named** non-renewable resource. *[8]*

Expression of ideas *[2]*

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5. (a) Draw a system diagram to illustrate the impact of acid deposition on an ecosystem. *[4]*

(b) Compare and contrast the solutions to reducing acid deposition with those for **one** other **named** form of pollution. *[6]*

(c) Discuss why societies have different perspectives on the issue of Global Warming. *[8]*

Expression of ideas *[2]*

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