22126302

International Baccalaureate®
Baccalauréat International
Bachillerato Internacional

ENVIRONMENTAL SYSTEMS AND SOCIETIES
STANDARD LEVEL
PAPER 2

Candidate session number

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Friday 11 May 2012 (morning)

2 hours

Examination code

2	2	1	2	–	6	3	0	2

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]*.

SECTION A

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

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

1. (a) With reference to Figure 3, identify the type of biome found in Iraq. *[1]*

....

(b) (i) Figure 4 shows the Red List conservation status of eight species from the marshes. List **two** factors used to determine a species' Red List conservation status. *[1]*

1. ....

2. ....

(ii) Outline **two** forms of natural income that are obtained from the marshes. *[2]*

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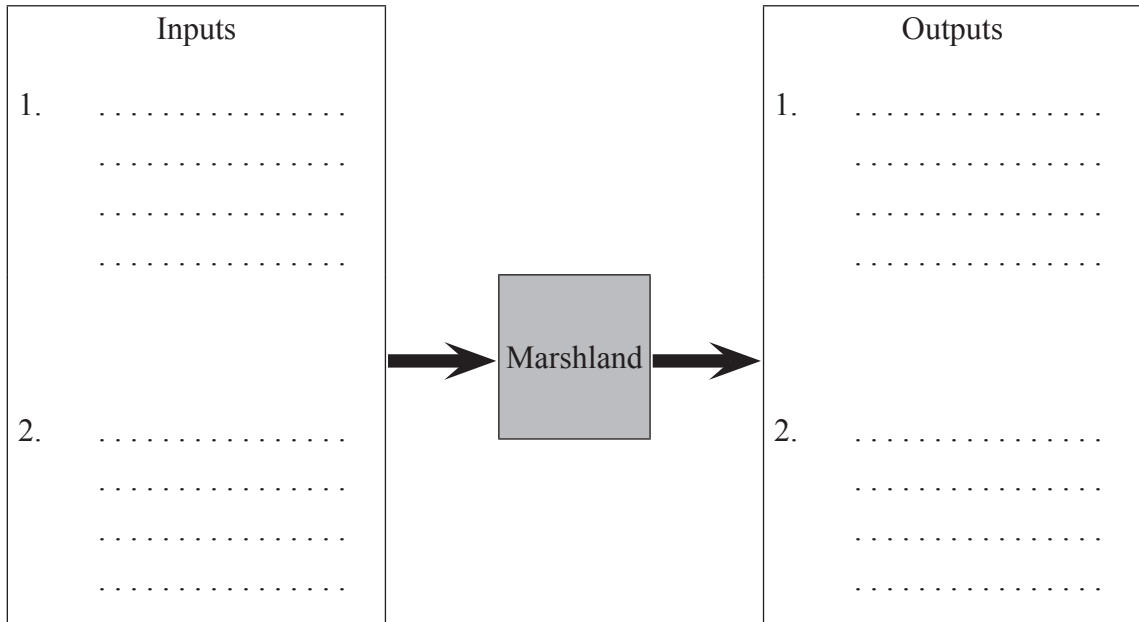
(This question continues on the following page)

(Question 1 continued)

(c)   Annotate the systems diagram below with **two** inputs of water and **two** outputs of water in the marshland ecosystem. *[2]*

Inputs		Outputs
1. . . . . 2.	Marshland	1. . . . . 2. . . . .

(d)   (i)   Identify the stage of the demographic transition model represented by Figure 5. *[1]*

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(ii)   With reference to Figure 5 and Figure 6, discuss the effect Iraq's pattern of population growth may have on water resources. *[3]*

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(Question 1 continued)

(e) (i) With reference to Figure 9, compare the numbers of species in the re-flooded marsh with historical records.   *[2]*

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(ii) With reference to Figure 10, compare the water quality of the natural marsh to the water quality of the re-flooded marshes.   *[3]*

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(iii) With reference to Figure 11, suggest why marshland re-flooding has failed to return the ecosystems to their normal functional level.   *[3]*

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(Question 1 continued)

(f)   Plans are being discussed to restore a much larger area of the marshes by using a greater amount of water from the Tigris and Euphrates rivers.

(i)   With reference to Figure 12 (a) and Figure 12 (b) suggest **two** variables that might influence an individual's willingness to pay to restore the marshes.   *[2]*

(ii)   With reference to **all** of the data in the resource booklet, evaluate the plan to re-flood the marshes completely.   *[5]*

Turn over

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) With reference to examples, distinguish between the terms *succession* and *zonation*.   *[4]*

   (b) With reference to a **named** example of an ecosystem, explain why the climax community is more diverse and therefore stable, than a community which has been interrupted by human activity.   *[6]*

   (c) Explain why an understanding of how ecosystems work can help people to manage resources effectively.   *[8]*

   Expression of ideas   [2]

3. (a) Distinguish between the terms *biodiversity* and *abundance*.   *[4]*

   (b) Compare the likely views of a Deep Ecologist and a Cornucopian on the exploitation of oil reserves in a pristine (untouched) environment.   *[5]*

   (c) Explain why some people believe that the ecological footprints of some countries need to be reduced. Justify whether an ecocentric **or** a technocentric approach to reducing the ecological footprint is more likely to be successful.   *[9]*

   Expression of ideas   [2]

4. (a) Outline the Gaia hypothesis and suggest how it differs from more traditional ideas about how the Earth works. *[4]*

(b) Explain, with the aid of a diagram, what is meant by the term *negative feedback*. Refer to two examples of negative feedback in your answer. *[5]*

(c) State whether you believe global warming **or** biodiversity loss represents the bigger threat in the future. Justify your viewpoint. *[9]*

Expression of ideas *[2]*

5. (a) Distinguish between the terms *sustainability* and *sustainable development*. *[4]*

(b) Define the terms *gross primary productivity* (GPP) and *net primary productivity* (NPP). Explain, with reference to **two** contrasting biomes, why one biome will be more productive than the other. *[7]*

(c) Justify which criteria you think should be used to judge the success of a conservation area. Evaluate the success of a **named** protected area using the criteria you have identified. *[7]*

Expression of ideas *[2]*

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