



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

Tuesday 18 May 2010 (morning)

Candidate session number

2 hours

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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 of Section A in the spaces provided. Refer to the resource booklet which accompanies this question paper.
- Section B: answer two questions from Section B. Write your answers on answer sheets. Write your session number on each answer sheet, and attach them to this examination paper and your cover sheet using the tag provided.
- At the end of the examination, indicate the numbers of the questions answered in the candidate box on your cover sheet and indicate the number of sheets used in the appropriate box on your cover sheet.



**SECTION A**

*Answer all of Section A in the spaces provided.*

*The resource booklet provides information on the island of Borneo. Use the resource booklet and your own studies to answer the following.*

1. (a) (i) The island of Borneo lies on the equator. State **two** types of ecosystem that may be found on Borneo. [1]

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- (ii) Explain why gross primary productivity is high in Borneo. [1]

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- (iii) Outline **two** reasons for the high levels of species diversity in Borneo. [1]

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*(This question continues on the following page)*



*(Question 1 continued)*

- (b) (i) Using Figure 4, construct a quantitative model to show the storages and flows in forest carbon cycling. [3]

- (ii) State and explain **two** effects of deforestation on the climate of Borneo. [2]

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*(Question 1 continued)*

- (c) (i) Using Figure 7, explain why a barrier to both entry and exit is needed in the protected area at Samboja. [2]

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- (ii) Explain why colonization by alang-alang grass causes a reduction in biodiversity. [2]

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- (d) (i) Describe **two** factors that have led to the endangered status of the orangutan. [2]

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- (ii) Identify **one** other species, in any ecosystem, that you consider to be an umbrella species and justify your choice. [1]

Name of umbrella species: .....

Justification: .....

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*(This question continues on the following page)*



(Question 1 continued)

- (e) (i) With reference to Figure 2 and Figure 9, calculate the percentage of land area of Borneo that would be protected by the “Heart of Borneo” project. [1]

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- (ii) Suggest **one** cost and **one** benefit of oil palm production for the environment and for human health. [4]

	Cost	Benefit
Environment:	..... .....	..... .....
Human health:	..... .....	..... .....

- (f) (i) Evaluate the message in the slogan “Save Borneo Save The World” on the poster in Figure 10. [3]

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- (ii) Justify your personal viewpoint on the value of international cooperation in the conservation of tropical rainforests. [2]

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**SECTION B**

Answer **two** questions. Write your answers on the answer sheets provided. Write your session number on each answer sheet, and attach them to this examination paper and your cover sheet using the tag 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) Outline the advantages of **two** energy sources, and suggest why one plays a greater role in meeting energy needs than the other in a **named** country. [5]
- (b) Outline how the combustion of fossil fuels can cause acid deposition and photochemical smog. [7]
- (c) Discuss, with reference to examples, the human factors which affect the successful implementation of pollution management strategies. [6]
- Expression of ideas* [2]

3. (a) Outline, giving reasons, **two** factors used to determine a species' Red List conservation status. [4]
- (b) Explain how human actions can reduce species diversity in **two named** ecosystems you have studied. [6]
- (c) Evaluate the importance of species-based conservation and protected areas in the preservation of biodiversity for future generations. [8]
- Expression of ideas* [2]



4. (a) Describe a method for measuring changes in abiotic components in a **named** ecosystem affected by human activity. [5]
- (b) Explain how global warming may lead to changes in biotic components of ecosystems, and why these changes are significant for humans. [6]
- (c) Describe ecocentric and technocentric responses to global warming and justify which may be more effective in reducing the impacts of global warming. [7]

*Expression of ideas* [2]

5. (a) Outline how an age/sex pyramid will change as a country undergoes economic development. [3]
- (b) Explain why attitudes towards the environment change over time. Refer to **named** historical influences in your answer. [6]
- (c) Explain, with reference to examples, how economic and cultural factors affect human population dynamics, and justify which you think are more significant. [9]

*Expression of ideas* [2]

