



88076302

**ECOSYSTEMS AND SOCIETIES  
STANDARD LEVEL  
PAPER 2**

Monday 5 November 2007 (morning)

2 hours

Candidate session number

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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 deep-ocean ecosystems. Use the resource booklet and your own studies to answer the following.*

1. (a) State the names of the following.
  - (i) The deep-ocean zone which is over 1 km deep.
 

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  - (ii) The flat plain found on the ocean floor. [1]

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- (b) Suggest **one** reason why relatively little is known about many species in the deep oceans. [1]

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- (c) (i) Explain why phytoplankton is found mainly near the surface in ocean ecosystems. [1]

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- (ii) State an abiotic factor responsible for the zonation observed in the deep ocean. [1]

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- (iii) With reference to **Figure 2**, state which trophic level is occupied by the seagull. [1]

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*(This question continues on the following page)*



*(Question 1 continued)*

- (d) With reference to **Figure 3**, identify **two** adaptations of the deep-ocean prawn to life on the ocean floor. [2]

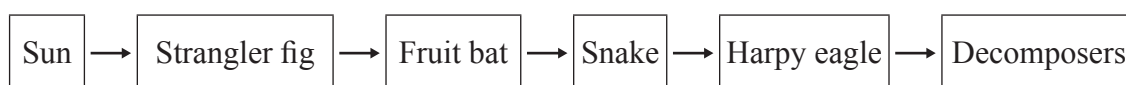
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- (e) (i) A simplified energy flow diagram for a tropical forest food chain is shown below.



In the space provided below, sketch a simplified energy flow diagram to show how energy flows through the food chain at a deep-ocean vent. [1]

- (ii) Suggest which features of deep-ocean food webs make them particularly vulnerable to disturbance. [2]

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- (iii) State **one** way in which organic matter leaves the deep-ocean ecosystem. [1]

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*(This question continues on the following page)*

*(Question 1 continued)*

- (f) (i) With reference to **Figure 6**, describe and explain the pattern shown in the graph of catches of Orange roughy during the 1990s. [3]

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- (ii) Suggest how the problem of unsustainable fishing practices might be overcome, from an ecocentric viewpoint and a technocentric viewpoint. [4]

Ecocentric .....

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Technocentric .....

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*(This question continues on the following page)*

*(Question 1 continued)*

- (g) (i) With reference to **Figure 7**, state the amount of carbon stored in the world's oceans. [1]

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- (ii) Suggest why scientists are increasingly interested in the role that oceans play as carbon sinks. [1]

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- (iii) Describe **two** reasons why ocean levels are expected to increase as a result of global warming. [1]

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- (h) Suggest why there is relatively little public pressure to conserve deep-ocean ecosystems and justify the need for them to be conserved. [4]

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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 what is meant by a *model*. [2]

- (b) Evaluate the models used:
- to predict the growth of human populations
  - to predict climate change
  - to assess demands human populations make on their environments. [9]

(c) With reference to examples, explain the importance of understanding cultural factors when designing policies to control population growth. [7]

*Expression of ideas* [2]

3. (a) Define the term *pollution*. With reference to a **named** pollutant (other than solid domestic waste) describe the impact it can have on the structure and functioning of an ecosystem you have studied. [6]

(b) Describe and evaluate pollution management strategies for the pollutant you have **named** in part (a). [6]

(c) State and justify your personal viewpoint on the success of different strategies for managing solid domestic waste. [6]

*Expression of ideas* [2]



4. (a) Outline the concept of sustainability. [3]
- (b) Evaluate the importance of global summits in shaping attitudes towards sustainability. Refer to specific summits in your answer. [5]
- (c) Discuss the factors which affect the choice of contrasting energy sources adopted in **two** societies you have studied. [10]

*Expression of ideas* [2]

5. (a) Describe the role of soil in the transfer and transformation of water and nitrogen within an ecosystem. [5]
- (b) Compare soil management strategies in a **named** commercial farming system with those in a **named** subsistence farming system. [8]
- (c) Discuss how viewing soils as systems can help farmers to understand and reduce the causes of soil degradation. [5]

*Expression of ideas* [2]