



22076302

**ECOSYSTEMS AND SOCIETIES**  
**STANDARD LEVEL**  
**PAPER 2**

Tuesday 15 May 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 water resources. Use the resource booklet and your own studies to answer the following.*

1. (a) What geographical features make the Maldives susceptible to damage from a tsunami? [2]

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- (b) List the **three** types of freshwater supply the Maldivian population relies on and state whether each supply is renewable **or** replenishable. [3]

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- (c) Describe the state of Maldivian groundwater after the 2004 tsunami. Suggest sources of contamination. [4]

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*(Question 1 continued)*

- (d) (i) Deduce why water resources may become a limiting factor for Maldivian tourism. [2]

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- (ii) Outline the trend in global water resources up to 2050. [2]

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- (e) Discuss and evaluate **three** strategies to make tourism more sustainable in the Maldives. [6]

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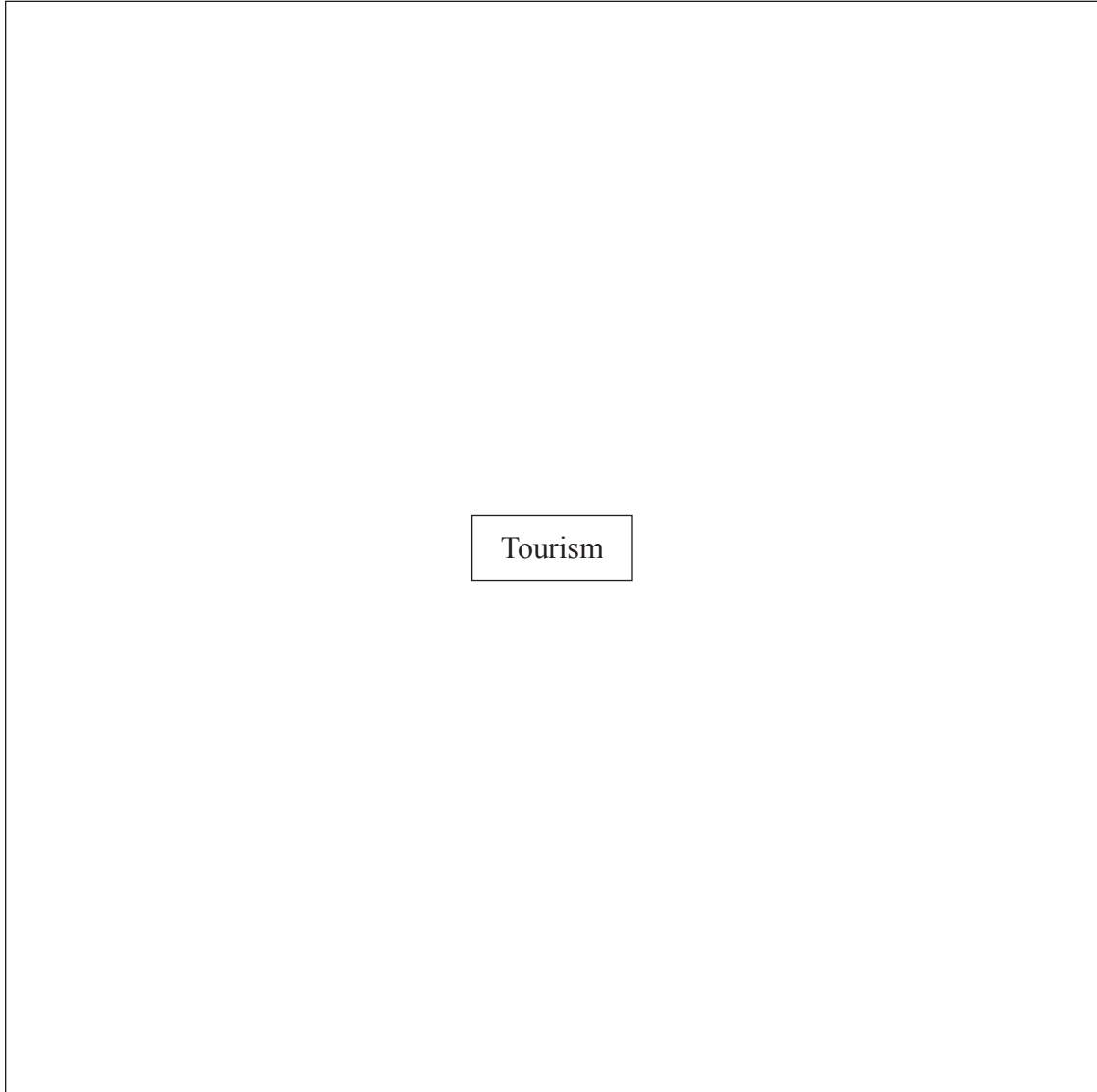
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*(Question 1 continued)*

- (f) Tourism is an important economic activity in the Maldives. Construct a model (diagram) that demonstrates the range of impacts tourism may have both directly and indirectly on Maldivian **ecosystems**. [4]



- (g) State **two** positive impacts of tourism. [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. The Gaia Hypothesis proposes that our planet functions as a single organism that maintains conditions necessary for its survival by feedback mechanisms. It was formulated by James Lovelock in the mid-1960s. In his recent book *The revenge of Gaia*, he suggests that we have passed the “tipping point” on global warming and that feedback mechanisms will speed up the rate of global warming.

- (a) State what type of system the Earth is and what the inputs and outputs are. [3]
- (b) Using positive and negative feedback models explain the process of climate change. [7]
- (c) Scientists use computer simulations to model the effects of changes in the temperature of the Earth. Discuss the advantages and disadvantages of this modelling. [4]
- (d) Describe your personal viewpoint on the global warming issue and justify your position based on the evidence. [4]

*Expression of ideas* [2]



3. (a) For a **named** example of pollution that you have studied, describe and evaluate the pollution management strategies that may be used to reduce the impact of the pollutant. [7]
- (b) Describe and explain the impact of changes in ozone concentration on ecosystems and organisms. [6]
- (c) Justify whether you believe that sustainable development is possible on Earth in the long-term. [5]

*Expression of ideas* [2]

4. (a) Distinguish clearly between *succession* and *zonation* using **named** examples and diagrams. [6]
- (b) Compare and contrast the production : respiration ratios of a food production system you have studied and a natural ecosystem with a climax community. [6]
- (c) Discuss the characteristics of an ecosystem that would allow it to support high biodiversity and explain what the threats are to this ecosystem. [6]

*Expression of ideas* [2]



5. M Wackernagel calculates that the Earth has only 1.7 hectares *per capita* available for human use. These 1.7 hectares become the ecological benchmark figure for comparing people's ecological footprints. Assuming no further ecological degradation, the amount of available biologically productive space will drop to 1.0 hectare *per capita* once the world population reaches its predicted 10 billion by 2040.

[Source: WWF *Living Planet Report of 2004*]

- (a) Explain how population pyramids data can allow countries to monitor population changes. [5]
- (b) Discuss the relationship between population, resource consumption and technological development, and their influence on carrying capacity and economic growth. [6]
- (c) Discuss the advantages and disadvantages of reducing use, reusing and recycling resources. [7]

*Expression of ideas* [2]

