UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education
Advanced Subsidiary Level and Advanced Level

CANDIDATE NAME	

CENTRE NUMBER						CANDIDATE NUMBER				

ENVIRONMENTAL MANAGEMENT **8291/02**

Paper 2 Hydrosphere and Biosphere **May/June 2007**

1 hour 30 minutes

Additional Materials: Answer Booklet/Paper

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams, graphs, tables or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE ON ANY BARCODES.

Section A
Answer **all** questions.
Write your answers in the spaces provided on the question paper.

Section B
Answer **one** question from this section.
Answer the question on the separate answer paper provided.

At the end of the examination,
1. fasten all separate answer paper securely to the question paper;
2. enter the question number from Section B in the grid opposite.

For Examiner's Use	
Section A	
1	
2	
Section B	
Total	

This document consists of **10** printed pages and **2** blank pages.

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For Examiner's Use

Section A

Answer **all** questions in this section.

Write your answers in the spaces provided.

1 This question is concerned with the causes, effects and management of marine pollution**.**

(a) **(i)** What is meant by the term *marine pollution*?

.....

.....[1]

(ii) Name **one** type of marine pollution that is organic and **one** that is inorganic. For each type state a likely source.

1 organic type .....

source .....

2 inorganic type .....

source .....[4]

(iii) Explain why most marine pollution comes from the land and remains in coastal waters.

.....

.....

.....[2].

(b) Describe the natural processes that would cause the pattern of pollution as described in the following statement that was made by a sailor.

"A river of polystyrene cups and bits of plastic stretches across the ocean. There isn't a clean spot in the Atlantic Ocean from Bermuda to the African coast".

.....

.....

.....[2]

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(c) The International Convention for the Prevention of Pollution from Ships prescribes the minimum distances from shore that pollutants can be dumped.
These are shown in Fig. 1.1.

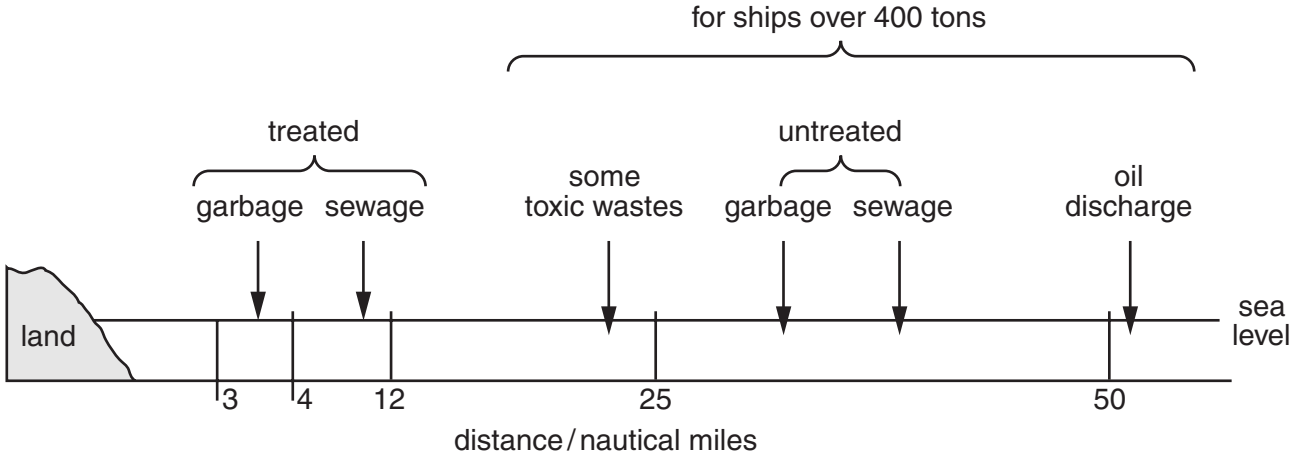

Fig. 1.1

(i) Explain why the minimum distance for the dumping of treated garbage and sewage is different from that of untreated garbage and sewage.

.....

.....

.....[2]

(ii) Explain why oil discharges are only permitted beyond the distance shown in Fig. 1.1.

.....

.....

.....[2]

(iii) Give **two** reasons why The International Convention for the Prevention of Pollution from Ships has not always been successful in controlling marine pollution.

.....

.....

.....

.....[2]

(d) Fig. 1.2 shows the geographical distribution of the eight largest oil tanker accidents that occurred between 1962 and 2000.

① Atlantic Express	287 000 tonnes	⑤ Haven	144 000 tonnes
② ABT Summer	260 000 tonnes	⑥ Odyssey	132 000 tonnes
③ Castillo de Bellver	252 000 tonnes	⑦ Torrey Canyon	119 000 tonnes
④ Amoco Cadiz	223 000 tonnes	⑧ Urquiola	100 000 tonnes

Fig. 1.2

(i) Give **one** reason for the distribution of oil tanker accidents as shown in Fig. 1.2.

.....

.....

.....[2]

(ii) Outline and assess the effectiveness of **one** technique that is used to remove large oil spills from the areas they have polluted.

.....

.....

.....

.....

.....

.....[3]

[Total: 20]

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2 **(a)** Fig. 2.1 shows how the size of the rabbit population changed after rabbits were introduced into Australia.

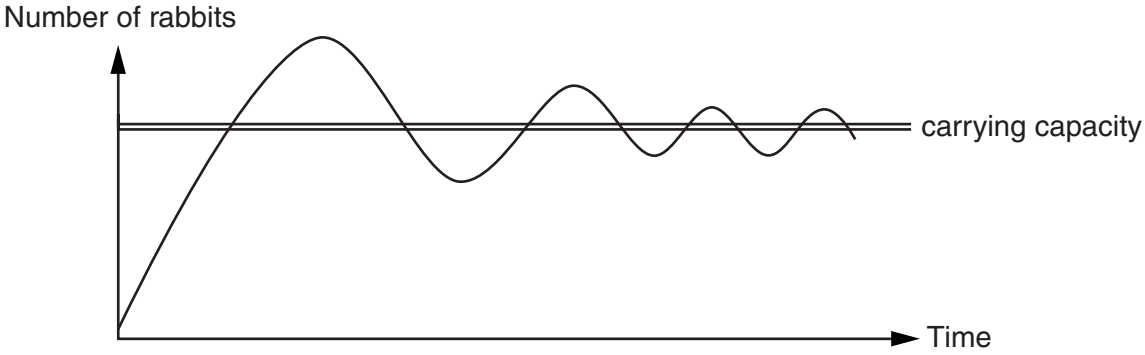

Fig. 2.1

(i) What is meant by the term *carrying capacity*?

.....

.....[2]

(ii) Explain the changes to the size of the rabbit population shown in Fig. 2.1.

.....

.....

.....[2]

(b) Fig. 2.2 shows three different models for world human population growth.

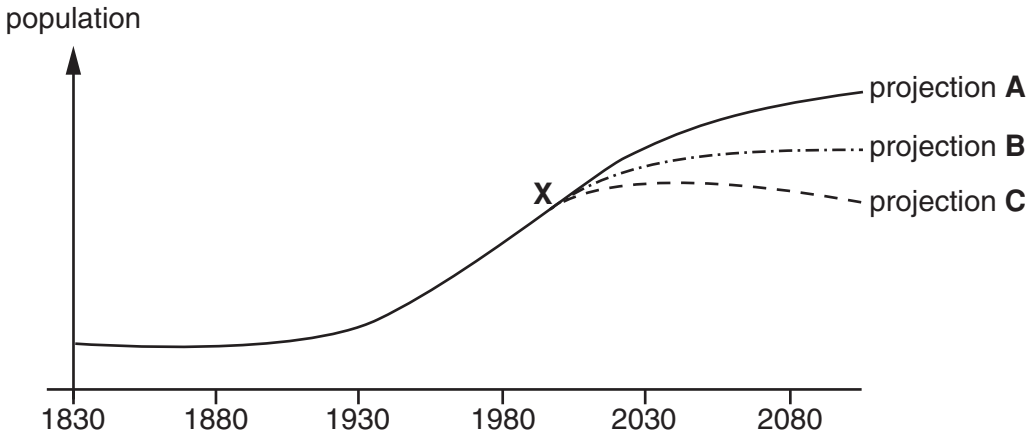

Fig. 2.2

(i) Describe and suggest a reason for the pattern of population growth between 1830 and point **X** on the graph.

.....

.....

.....[3]

(ii) Describe and suggest a reason for each of the three projections for population growth after point **X** on the graph.

- projection **A**

.....

.....

.....[2]

- projection **B**

.....

.....

.....[2]

- projection **C**

.....

.....

.....[2]

(c) Farmers in many parts of the world lose vital crops due to insect pests. The population of such pests can grow at an exponential rate if unchecked. Fig. 2.3 compares biological and chemical control of spider mite pests in crops of cucumbers.

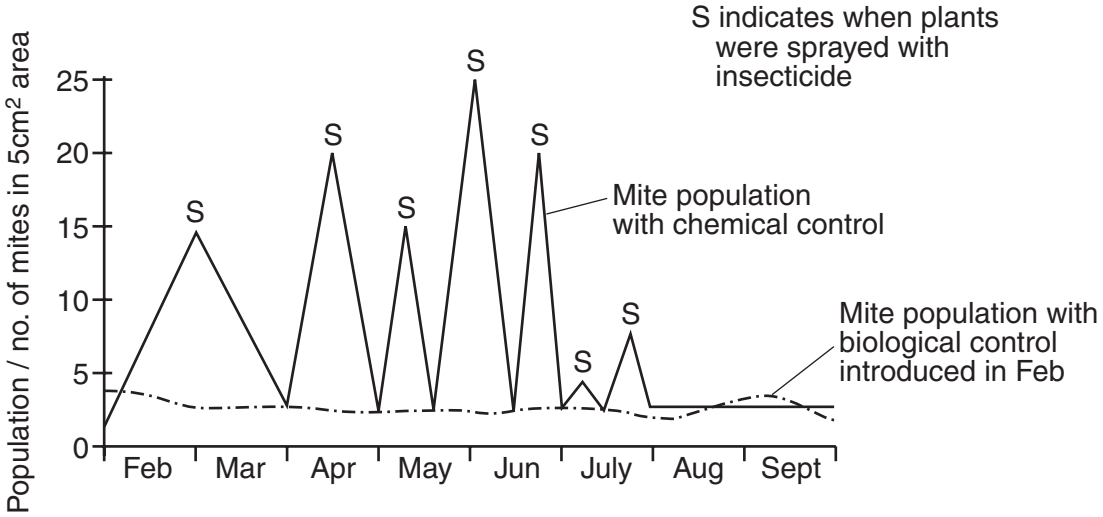

Fig. 2.3

(i) For each method of control, describe the trend in spider mite population shown in Fig. 2.3.

.....

.....

.....

.....[2]

(ii) Suggest why chemical control and biological control had different effects on the spider mite population.

.....

.....

.....

.....[2]

(iii) Suggest why biological control is often seen as being less damaging to the environment than chemical control.

.....

.....

.....

.....

.....

.....[3]

[Total: 20]

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Section B

Answer **one** question from this section.

Write your answers on the separate answer paper provided.

3 **(a)** Fig. 3.1 depicts a river drainage basin as a system containing flows and stores.

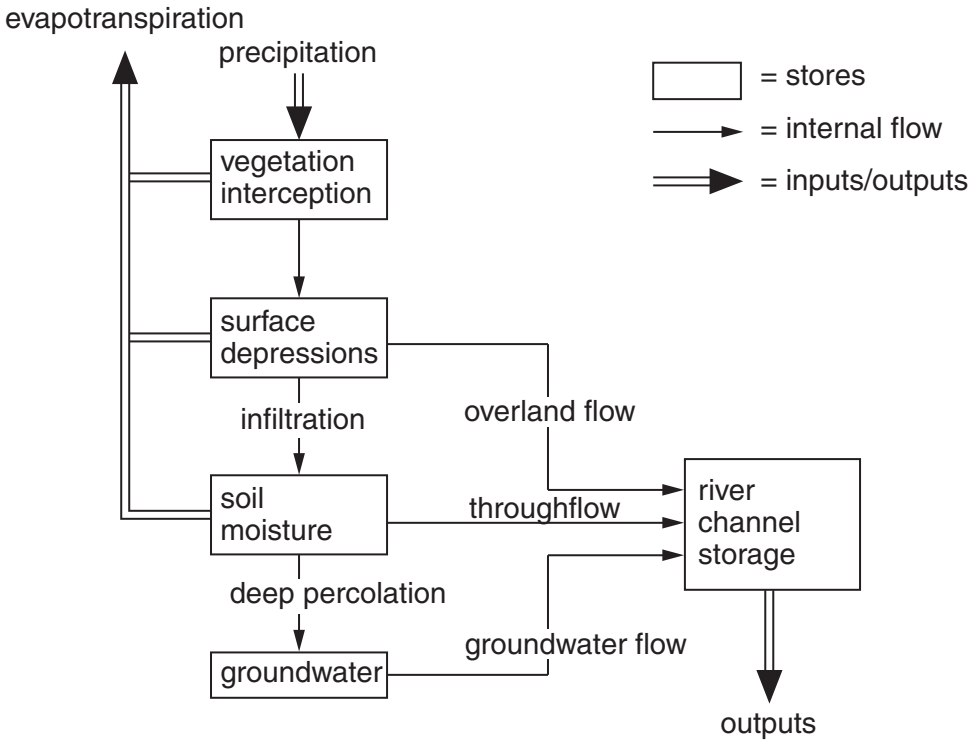

Fig. 3.1

Use Fig. 3.1 to describe how, in a drainage basin, natural processes can achieve a balance between inputs and outputs of water [10]

(b) With reference to examples with which you are familiar, discuss how efforts to achieve a sustainable supply of water can have positive and negative effects upon human activity and the environment. [30]

[Total: 40]

4 **(a)** Describe the relationship between climate and biomes shown in Fig. 4.1. [10]

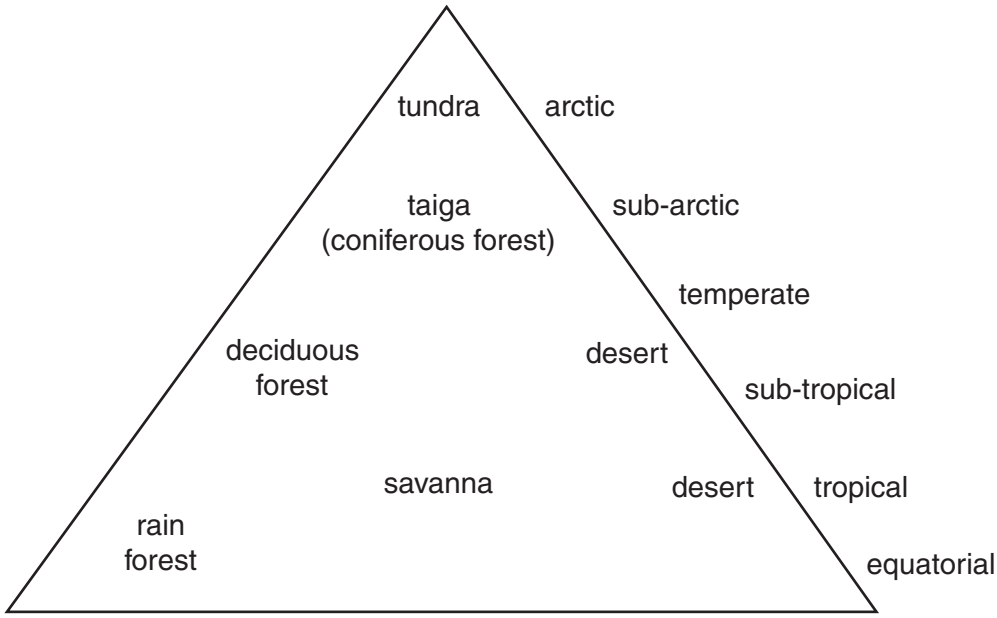

Fig. 4.1

(b) With reference to **two** of the biomes shown in Fig. 4.1, describe how human activity has affected the biotic and abiotic factors that maintain the stability of the ecological system. [30]

[Total: 40]

5 **(a)** Outline **three** ways that could be used to monitor changes to the Earth's biosphere. [10]

(b) With reference to an endangered environment you have studied, assess the extent to which conservation methods can be secondary to political and economic pressures. [30]

[Total: 40]

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