



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

CANDIDATE
NAME

CENTRE
NUMBER

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ENVIRONMENTAL MANAGEMENT

8291/22

Paper 2 Hydrosphere and Biosphere

May/June 2011

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 IN 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 **11** printed pages and **1** blank page.



Section A

Answer **all** questions in this section.

Write your answers in the spaces provided.

For
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Use

1 (a) What is meant by the term *ecosystem*?

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..... [2]

(b) Fig.1.1 shows a simplified food web for a deciduous woodland ecosystem.

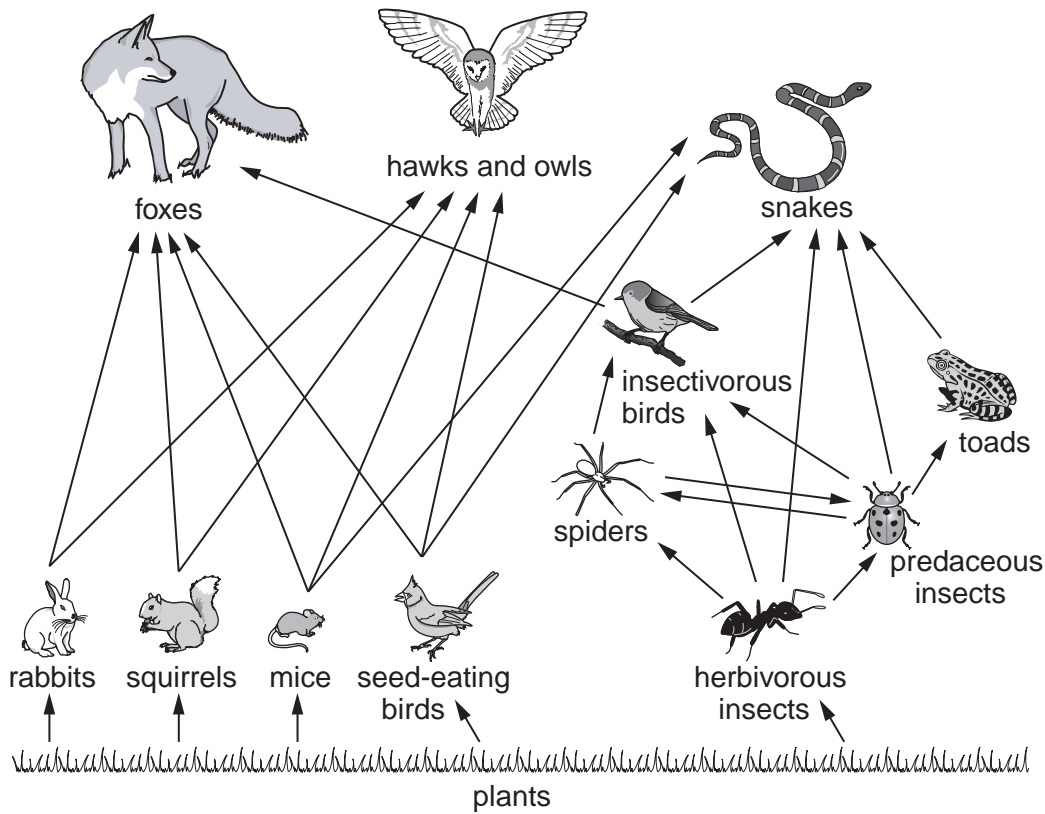


Fig. 1.1

(i) From Fig. 1.1 identify a four stage food chain ending in a top predator. Complete your answer in the boxes below.

plants → [] → [] → []

[2]

(ii) With reference to Fig.1.1 describe how energy flows through a food web.

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..... [4]

(iii) Explain how biodiversity can be an indicator of the stability of an ecosystem.

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(c) Fig.1.2 shows a nutrient cycle typical of that in many tropical rainforests.

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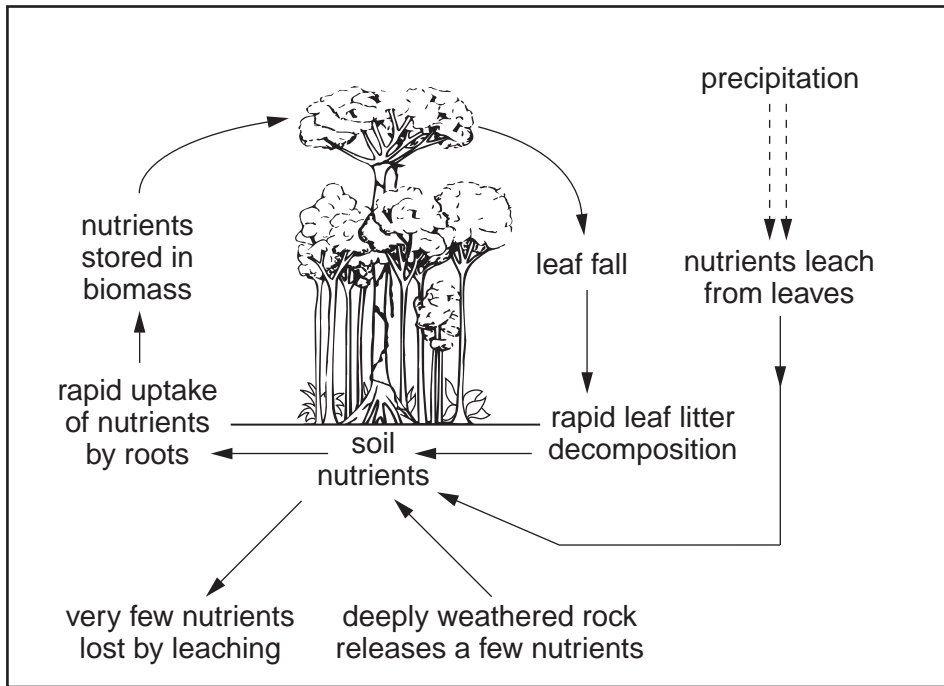


Fig. 1.2

(i) With reference to Fig.1.2, explain why tropical rainforest soils are frequently infertile.

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(ii) Describe the effects that deforestation would have on the nutrient flows shown in Fig. 1.2.

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[6]

[Total: 20]

2 (a) Fig. 2.1 contains information about the hydrological cycle within a river valley.

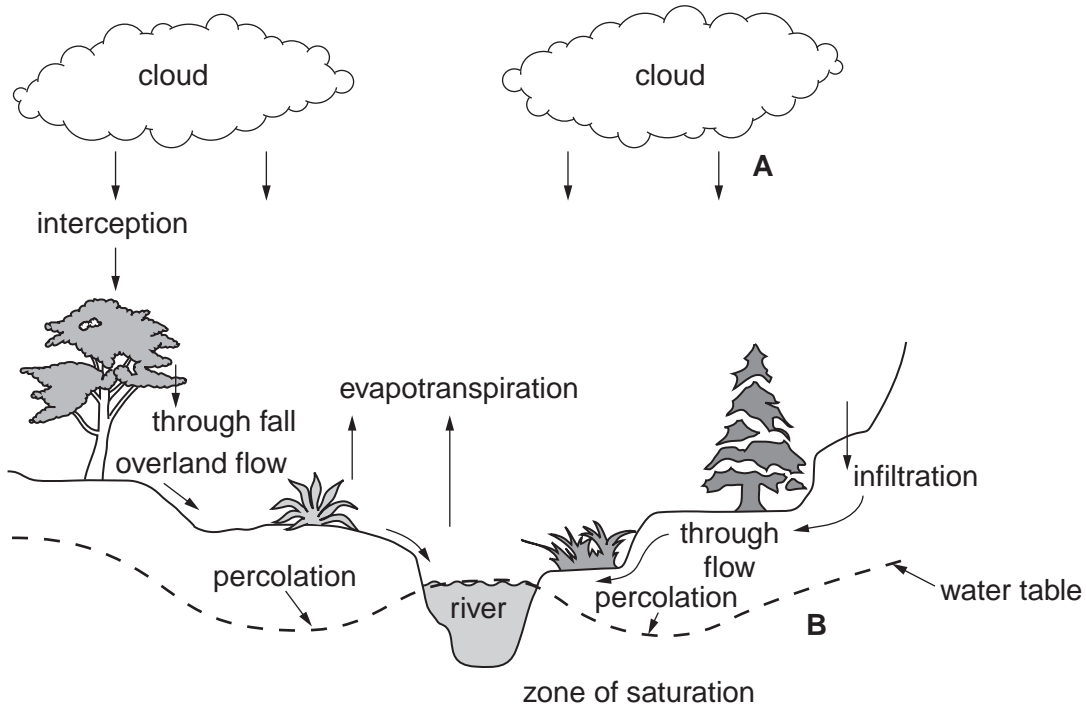


Fig. 2.1

(i) From Fig. 2.1 identify the flow that occurs at **A** and the store that occurs at **B**.

A

B [2]

(ii) What is meant by each of the terms *interception* and *water table*?

interception

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water table

..... [2]

(iii) Describe how the hydrological cycle shown in Fig. 2.1 might respond:

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- during a long dry summer,

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- during a period of prolonged rainfall.

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(b) Fig. 2.2 shows some of the hydrological processes to be found in a non-urban area and an urban area.

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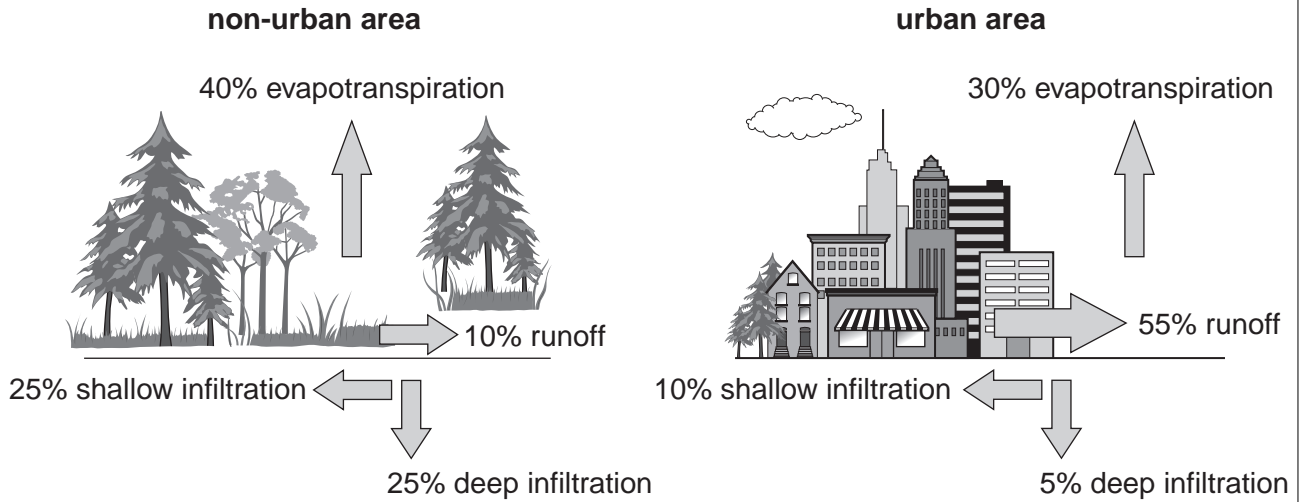


Fig. 2.2

(i) Use Fig. 2.2 to explain why the percentages of infiltration and surface runoff in the urban area are different from those in the non-urban area.

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(ii) Suggest and explain **two** possible effects the water losses from the urban area might have upon a nearby river.

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[Total: 20]

Section B

Answer **one** question from this section.

- 3 (a) Describe the relationship between climate and natural vegetation for **three** of the biomes shown in Fig. 3.1. [10]

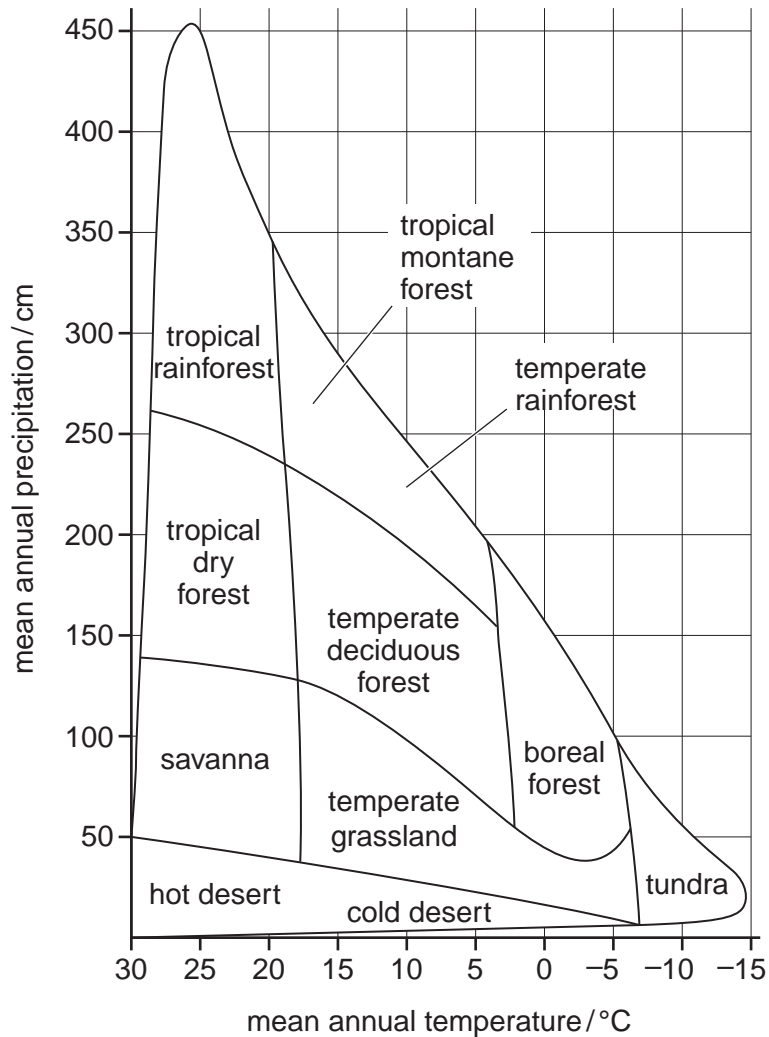


Fig. 3.1

- (b) With reference to **one** biome you have studied, describe the pressures human activity is placing on its ecosystems. Assess the methods that have been adopted to conserve the natural vegetation and wildlife within this biome. [30]

[Total: 40]

- 4 (a) Fig. 4.1 shows the estimated number of deaths that can be attributed to recent climatic change. Give **three** reasons why lower levels of precipitation may have contributed to the variations in mortality shown in Fig. 4.1. [10]

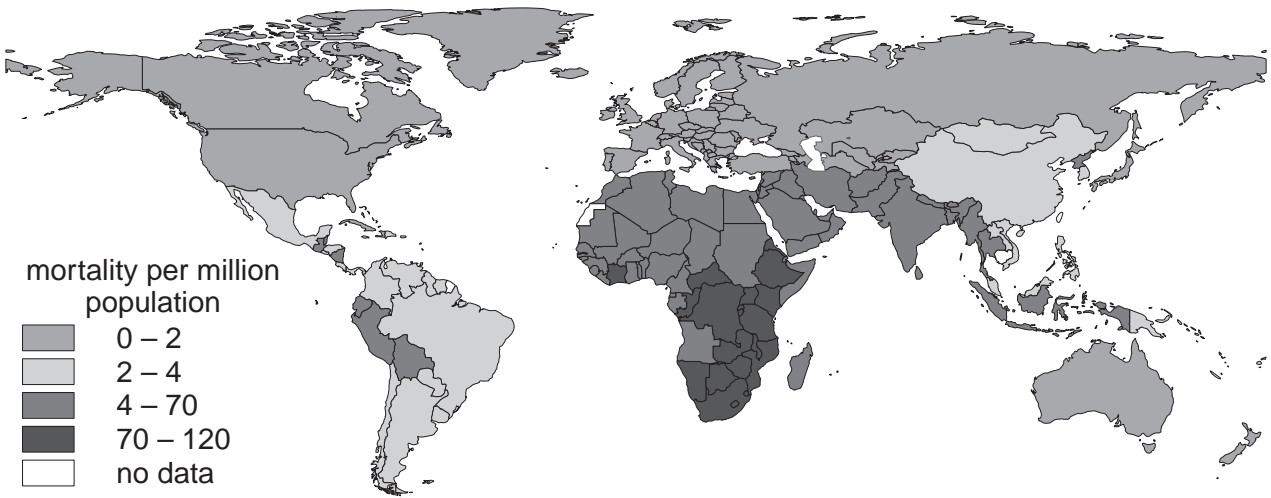


Fig. 4.1

- (b) With reference to examples you have studied, assess the extent to which the economic and social priorities in dam and reservoir construction outweigh considerations for the natural and human environment. [30]

[Total: 40]

- 5 (a) Outline the different demographic conditions that would produce the three possible projections for global population growth shown in Fig. 5.1. [10]

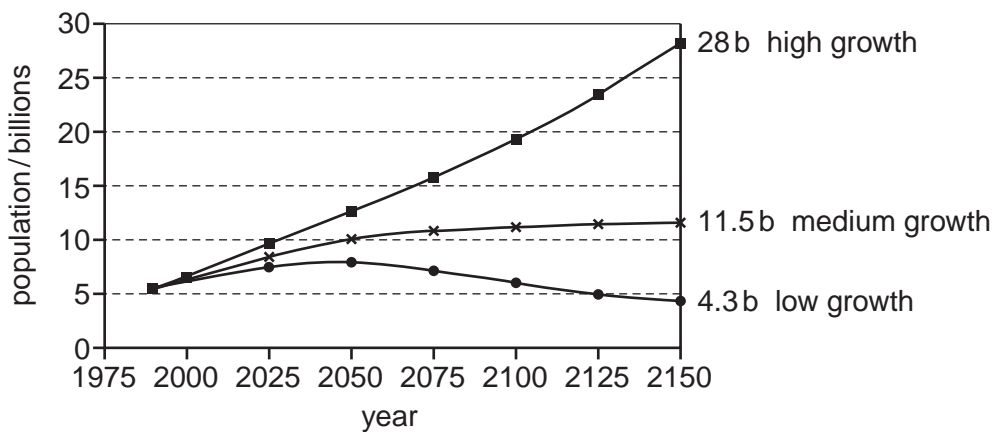


Fig. 5.1

- (b) To what extent are the pressures mankind is placing on the environment a consequence of population growth? With reference to a country you have studied, assess its strategies for achieving a sustainable balance between its demands for food and the environment. [30]

[Total: 40]

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