



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

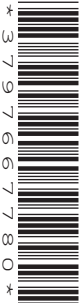
CANDIDATE  
 NAME

CENTRE  
 NUMBER

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**ENVIRONMENTAL MANAGEMENT**

**8291/23**

Paper 2 Hydrosphere and Biosphere

**May/June 2010**

**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	
<b>Section A</b>	
<b>1</b>	
<b>2</b>	
<b>Section B</b>	
<b>Total</b>	

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.

1 (a) What is meant by the terms *biome*, *net primary productivity (NPP)* and *biomass*?

biome .....

.....

NPP .....

.....

biomass .....

..... [3]

(b) Fig. 1.1 shows the locations of some of the world's major biomes.

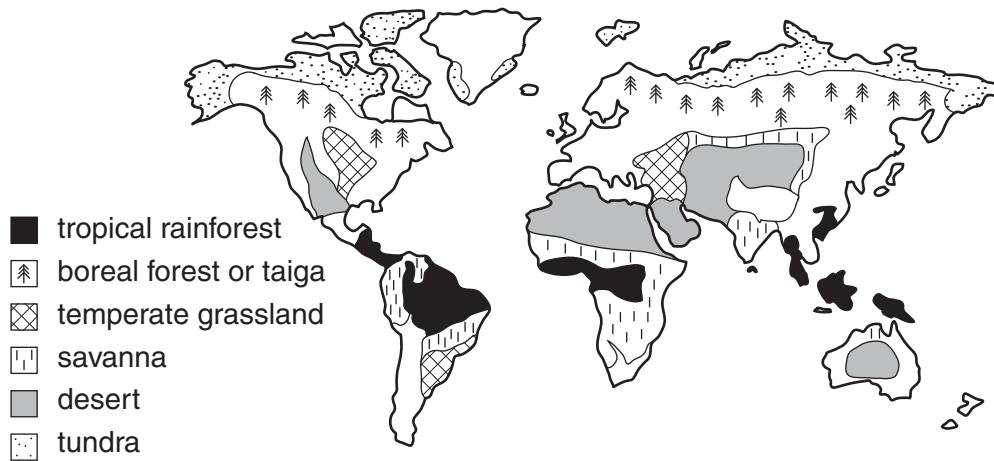


Fig. 1.1

(i) Name **one** biome associated with each of the following climatic conditions:

- hot summers, warm winters and a small amount of summer rainfall

.....

- cool short summers, very cold winters, small amounts of summer rainfall

.....

- hot and moist in every month.

..... [3]



- (c) Temperate grasslands such as the Prairies and the Pampas can be regarded as marginal areas that should not be over-farmed. Fig. 1.2 illustrates mechanised agriculture of the American Prairies and the climate of the area.



Average annual precipitation: 516 mm  
Mean temperature: 2.5°C

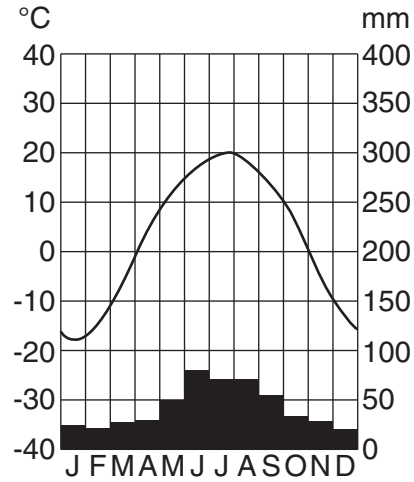


Fig. 1.2

- (i) Briefly explain why the climate of this area is regarded as semi-arid.

.....  
 .....  
 .....  
 ..... [2]

- (ii) Suggest why the farming activities shown in Fig. 1.2 might become unsustainable.

.....  
 .....  
 .....  
 .....  
 .....  
 ..... [3]

(iii) Outline **one** method that could be used to maintain future crop production in the area shown in Fig. 1.2.

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..... [2]

[Total: 20]

2 (a) Fig. 2.1 shows four sources of water pollution.

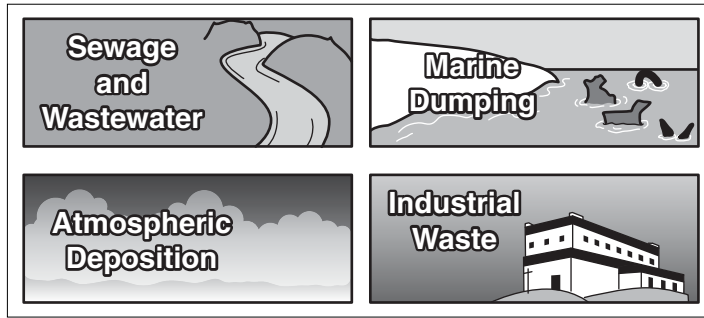


Fig. 2.1

(i) For each of the sources of water pollution shown in Fig. 2.1 identify a different type of pollutant.

- sewage and wastewater .....
- marine dumping .....
- atmospheric deposition .....
- industrial waste ..... [4]

(ii) Outline the effects pollution from sewage and wastewater may have upon human health and freshwater ecosystems.

- human health .....
- .....
- .....
- .....
- .....
- freshwater ecosystems .....
- .....
- .....
- .....
- ..... [4]

(iii) Describe **two** effects marine dumping by ships at sea might have upon marine ecosystems.

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..... [4]

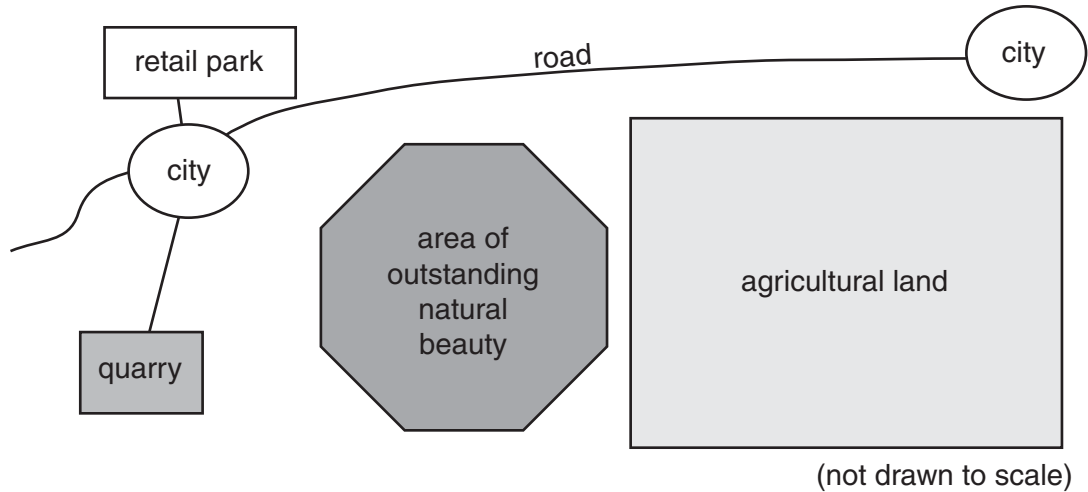




## Section B

Answer **one** question from this section.

- 3 (a) Fig. 3.1 shows some of the possible sources of conflicts of interest that can exert pressures upon an area of outstanding natural beauty.



**Fig. 3.1**

Briefly explain how the needs of local communities, public enjoyment of the countryside and the need for conservation would give rise to these conflicts of interest. [10]

- (b) Using examples you have studied, assess the responsibilities of National Parks in protecting areas that are of ecological importance and outstanding natural beauty. [30]

[Total: 40]

- 4 (a) Fig. 4.1 illustrates the region around an expanding city. The demands of the city give rise to adverse effects on the supply and quality of water in this region.

Describe **three** of these effects.

[10]

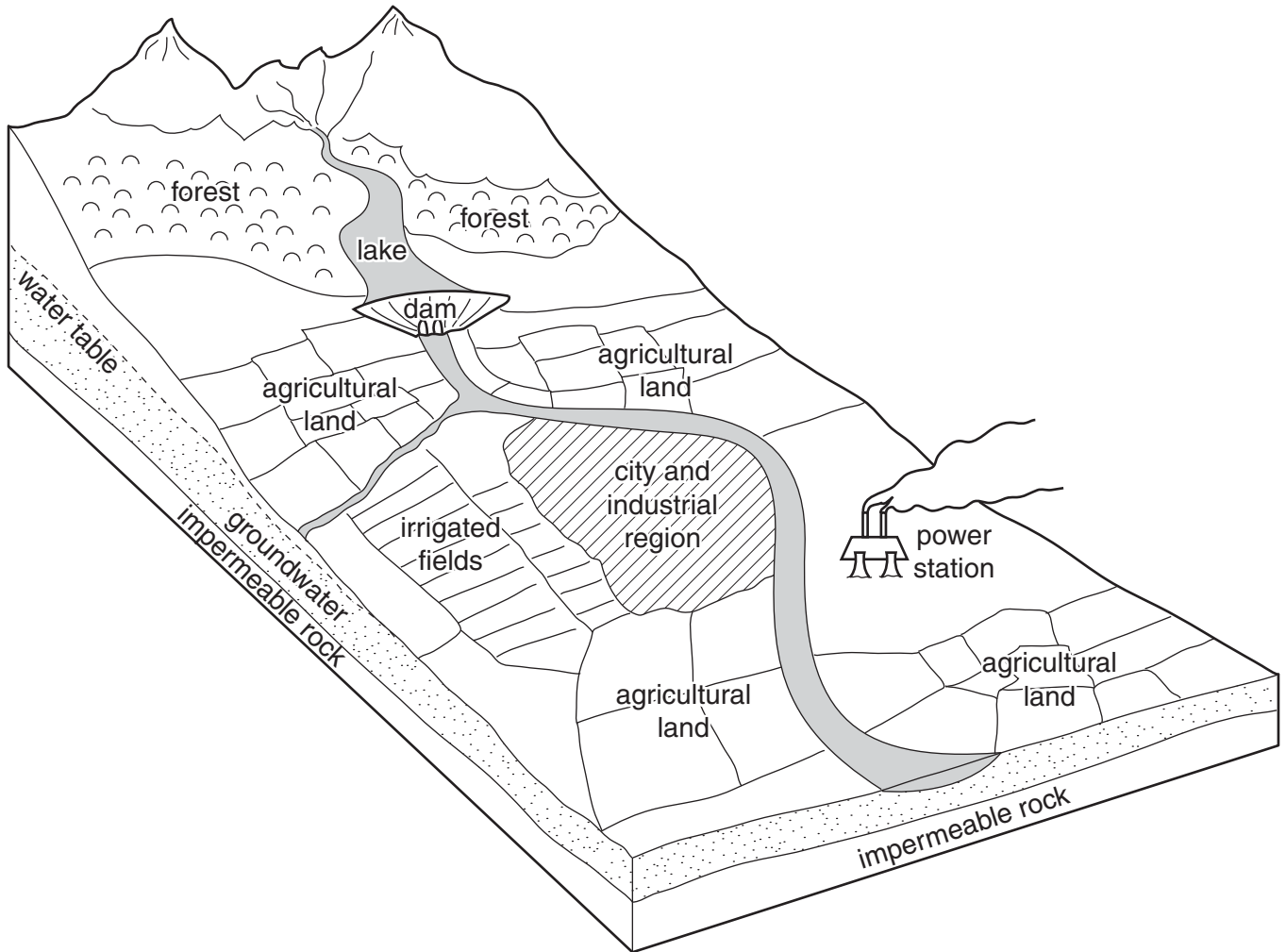
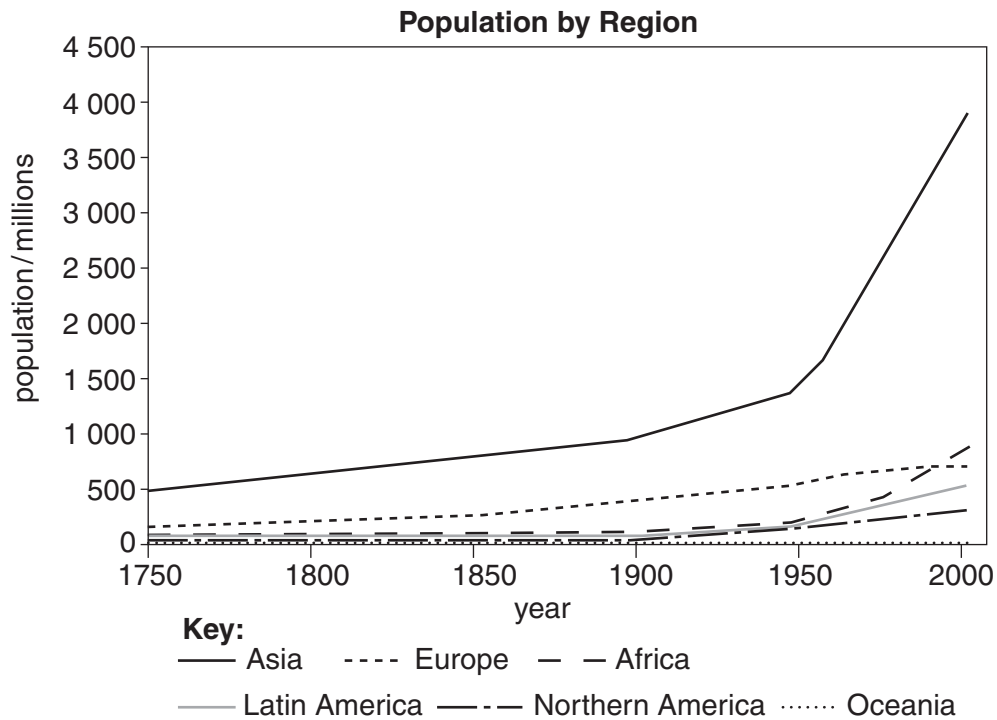


Fig. 4.1

- (b) With reference to named examples with which you are familiar, evaluate the strategies that have been adopted to achieve a sustainable supply of water. [30]

[Total: 40]

- 5 (a) Give **three** reasons for the differences in population growth for the regions shown in Fig. 5.1. [10]



**Fig. 5.1**

- (b) Why is it necessary for nations to develop policies for managing future changes to their population size? For **either** a less economically developed country (LEDC) **or** more economically developed country (MEDC), assess its policies for managing future population change. [30]

[Total: 40]

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*Copyright Acknowledgements:*

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Question 2b                   © [www.coolschool.ca/lor/GEO12/unit10/u10I04.htm](http://www.coolschool.ca/lor/GEO12/unit10/u10I04.htm).

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