



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

CANDIDATE
 NAME

CENTRE
 NUMBER

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ENVIRONMENTAL MANAGEMENT

8291/02

Paper 2 Hydrosphere and Biosphere

October/November 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	
Section A	
1	
2	
Section B	
Total	

This document consists of **12** printed pages.



Section A

Answer **all** questions in this section.

For
Examiner's
Use

1 (a) Fig. 1.1 shows the flows and stores of water in a hydrological cycle within a river valley.

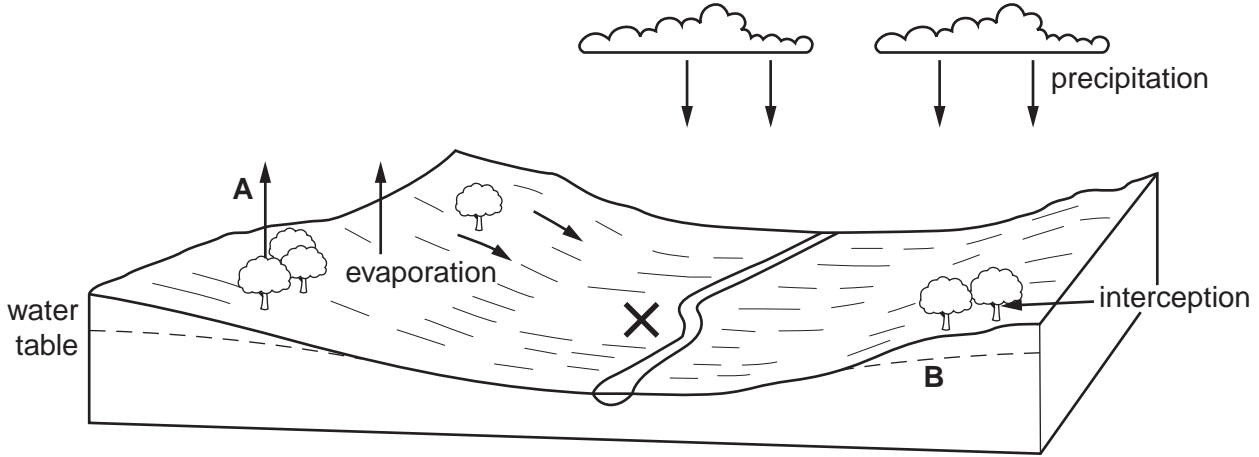


Fig. 1.1

(i) Name the flow that occurs at **A** and the store that occurs at **B** in Fig. 1.1.

A

B [2]

(ii) What is meant by the terms *evaporation* and *interception*?

evaporation

.....

interception

..... [2]

(iii) Describe how a balance between the input of water from precipitation and output of water from the river is maintained in a river basin.

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..... [3]

(iv) What effects would the construction of a large town in area X in Fig. 1.1 have upon the discharge of water into the river?

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..... [3]

(b) Fig. 1.2 contains information on the River Colorado Drainage Basin. Fig 1.3 shows how the discharge of the River Colorado below the Hoover Dam changed between 1920 and 2000.

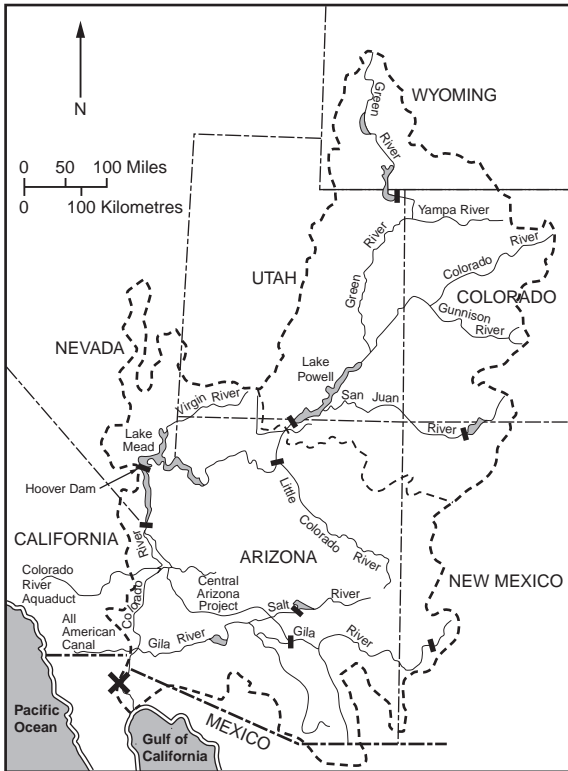


Fig. 1.2

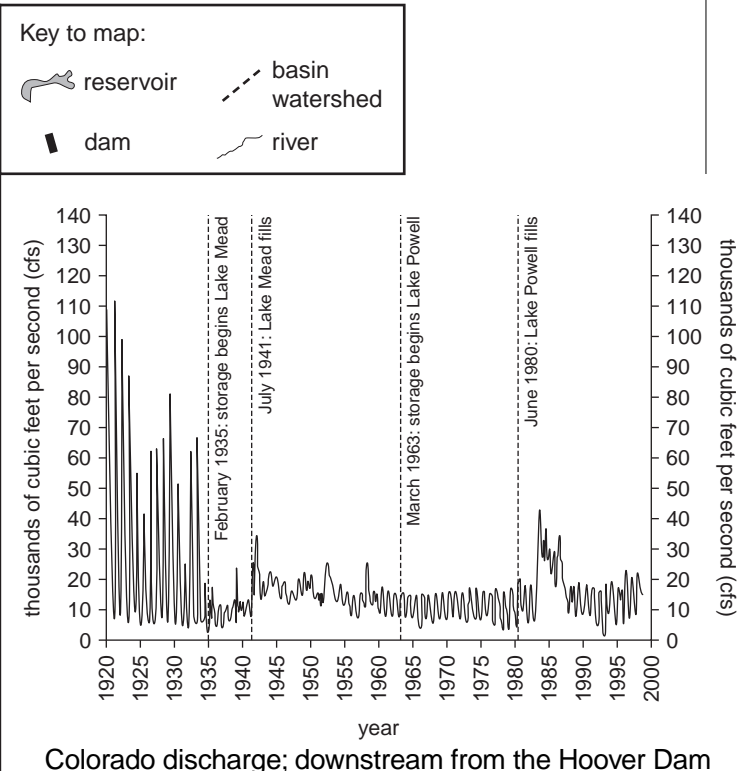


Fig. 1.3

(i) Using evidence from Fig.1.2 and Fig.1.3, describe how the River Colorado can now be regarded as being a managed river.

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[3]

- (ii) Suggest **three** ways in which management of the River Colorado benefits human activity.

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.....[3]

- (iii) Using evidence from Fig.1.3, outline how the management of the River Colorado could have a negative effect upon agriculture and the natural environment in area X in Fig.1.2.

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.....[4]

[Total: 20]

- 2 (a) Fig. 2.1 is a model that describes population size in terms of processes that form inputs and outputs.

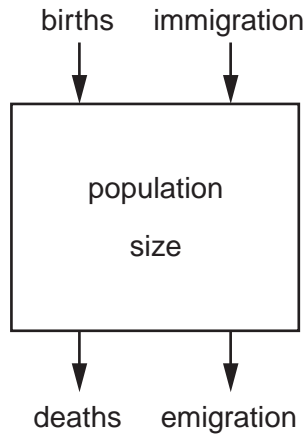


Fig. 2.1

- (i) Which **two** processes control natural population change?

.....[1]

- (ii) Describe how the inputs and outputs to the model interact to produce an increase in population.

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[2]

- (b) The demographic transition model in Fig. 2.2 shows how birth rates and death rates interact to produce changes to a nation's population.

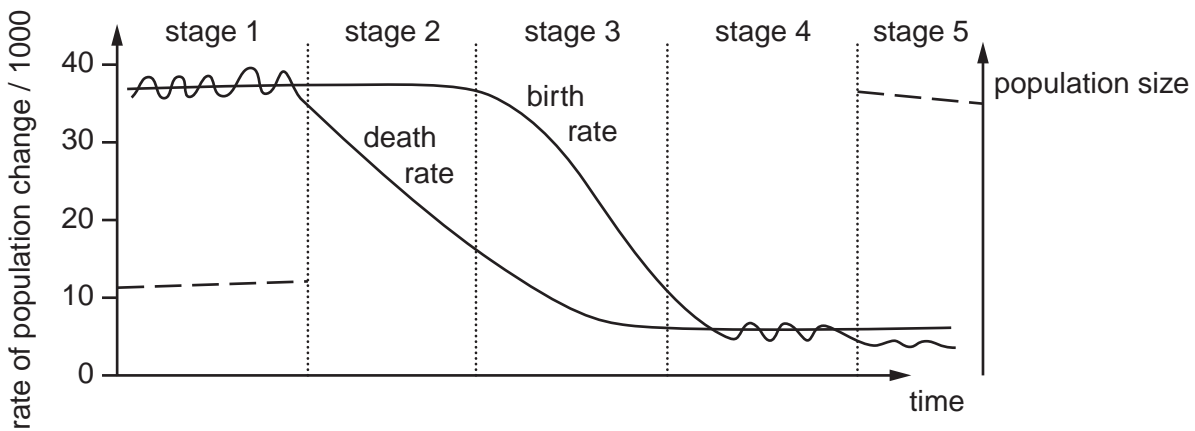


Fig. 2.2

(i) Complete the dashed line for stages 2, 3 and 4 in Fig. 2.2 to show how population size changes according to the birth rate and death rate. The position of this line in stages 1 and 5 is already drawn. [2]

(ii) Write the labels **Y** and **Z** onto Fig.2.2 to show the positions of France and Paraguay in the demographic transition model.

Label	Country	Birth Rate	Death Rate
Y	France	13/1000	8.5/1000
Z	Paraguay	25/1000	6/1000

[2]

(c) The population pyramids in Fig.2.3 show the population structure of a Less Economically Developed Country (LEDC) and a More Economically Developed Country (MEDC).

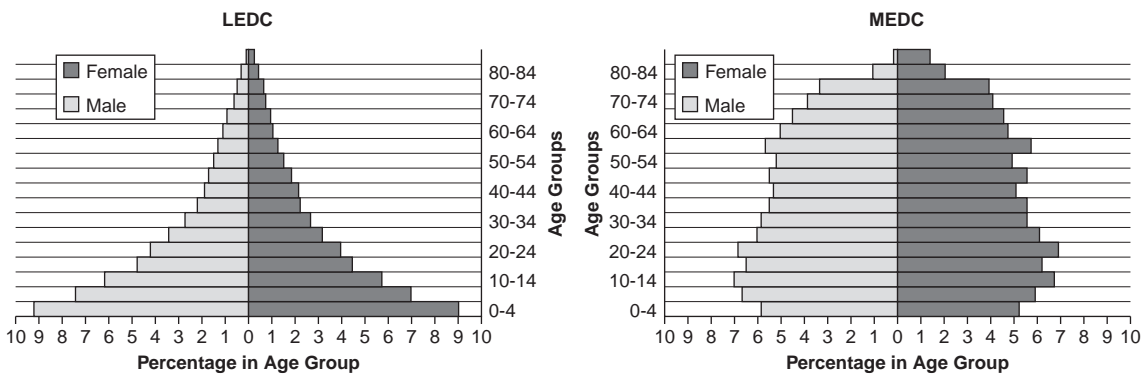


Fig. 2.3

Describe **two** socio-economic factors that would account for the difference between the two population pyramids.

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[4]

(ii) Explain the possible state of the world scenario for the period 2050 to 2100.

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[4]

[Total: 20]

Section B

Select **one** question from this section.

- 3 (a) Briefly describe the differences in the provision of safe drinking water and basic sanitation between Less Economically Developed Countries (LEDCs) and More Economically Developed Countries (MEDCs) as shown in Table 3.1. Give **three** reasons for these differences. [10]

Table 3.1

% population with a sustainable access to safe drinking water and basic sanitation		
	safe drinking water	basic sanitation
world total	83%	59%
MEDC total	99%	99%
LEDC total	80%	50%

- (b) With reference to **either** a LEDC **or** MEDC you have studied, describe the methods that are currently used to achieve a sustainable water supply and basic sanitation. Discuss **one** positive and **one** negative environmental effect of the methods you have described.

[30]

[Total: 40]

- 4 (a) Fig.4.1 shows a relationship between agricultural productivity and plant species diversity in soils at different levels of soil productivity.

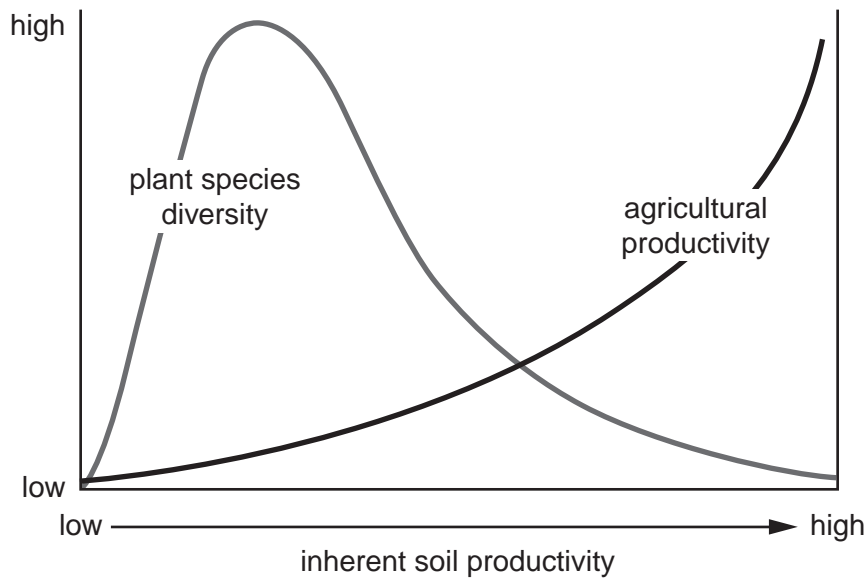


Fig. 4.1

Give **three** reasons for the way in which plant species diversity and agricultural productivity change in Fig. 4.1. [10]

- (b) Using examples with which you are familiar, describe how agricultural activity has contributed to land degradation. Assess **two** methods that would enable a sustainable use of agricultural land. [30]

[Total: 40]

- 5 (a) Describe the biotic and abiotic factors that maintain the ecosystems in a tropical rain forest such as that shown in Fig. 5.1. [10]



Fig. 5.1

- (b) Outline **three** reasons why the Earth's tropical rain forests should be conserved. With reference to examples you have studied, assess the methods that are being used to conserve tropical rain forest. [30]

[Total: 40]

Copyright Acknowledgements:

Question 1b © Map of Colorado Basin and discharge graph; USGS National Center.
 Question 2c © Population pyramid and developed country diagrams; www.lenebrae.org/.../population.pyramids.htm.
 Question 4 Figure 4.1 © Diagram; www.idrc.ca/en/ev-29587-201-1; The International Development Research Centre.
 Question 5 Figure 5.1 © flickr.com

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