

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

CANDIDATE NAME		
CENTRE NUMBER	CANDIDATE NUMBER	

987147327

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.

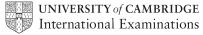
Answer the question on the separate answer paper provided.

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.



Answer all questions in this section.

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

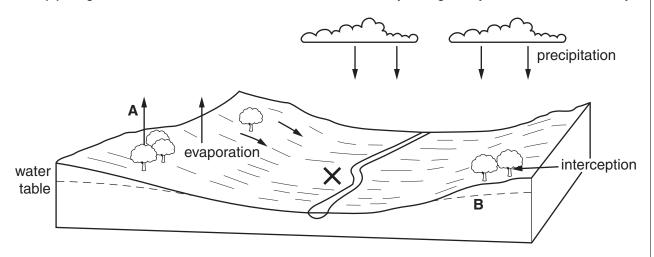


Fig. 1.1

(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.
	[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?	For Examiner Use
	[3]	1

(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.

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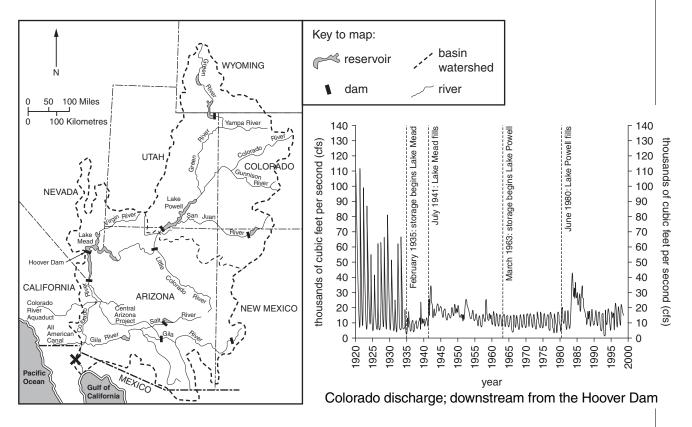


Fig. 1.2 Fig. 1.3

Using evidence from Fig.1.2 and Fig.1.3, describe how the River Colorado can now be regarded as being a managed river.
[3]

For Examiner's Use

(ii)	Suggest three ways in which management of the River Colorado benefits human activity.
	[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 ${\bf X}$ in Fig.1.2.
	[4]
	[Total: 20]

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

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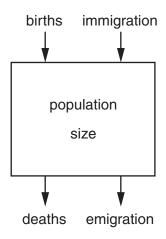


Fig. 2.1

(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.		

(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.

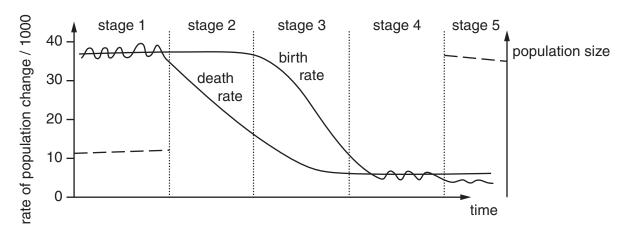


Fig. 2.2

(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.

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[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	
Υ	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).

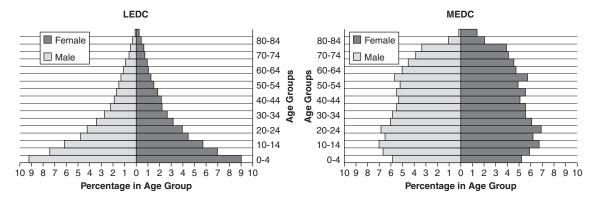


Fig. 2.3

Describe two socio-economic factors that would account for the difference between the two population pyramids.
[4]

(d) In 2004 an international committee suggested that the 'state of the world' would follow the trends shown in Fig. 2.4.

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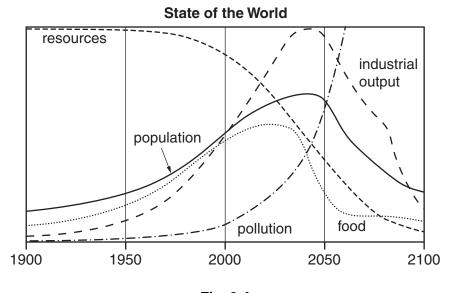


Fig. 2.4

industrial output, pollution and food between 1900 and 2000.		
[5]		
[5]		

Describe the relationship between changes to the global population, and resources,

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(i)

(ii)	Explain the possible state of the world scenario for the period 2050 to 2100.	For Examiner's Use
	[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.

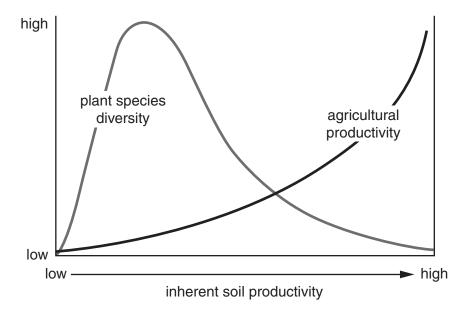


Fig. 4.1

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.ea/en/ev-29587-201-1; The International Development Research Centre.

Question 5 Figure 5.1 © flickr.com

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