

CANDIDATE  
NAME

CENTRE  
NUMBER

--	--	--	--	--

CANDIDATE  
NUMBER

--	--	--	--



**ENVIRONMENTAL MANAGEMENT**

**8291/22**

Paper 2 Hydrosphere and Biosphere

**May/June 2015**

**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 an HB pencil for any diagrams or graphs.  
Do not use staples, paper clips, glue or correction fluid.  
**DO NOT WRITE IN ANY BARCODES.**

Electronic calculators may be used.  
You may lose marks if you do not show your working or if you do not use appropriate units.

**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>	

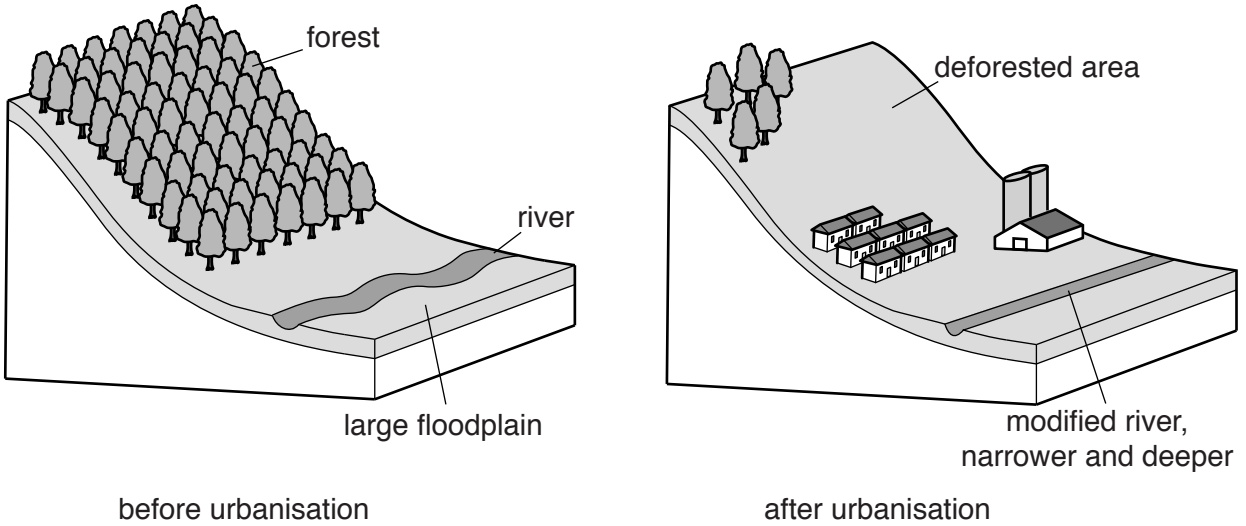
This document consists of **11** printed pages and **1** blank page.

**Section A**

Answer **all** questions in this section.

Write your answers in the spaces provided.

- 1 (a) Fig. 1.1 shows a river valley before and after urbanisation.



**Fig. 1.1**

- (i) With reference to Fig. 1.1, describe the flows and stores of water in the river valley before urbanisation and after urbanisation.

before urbanisation

.....

.....

.....

.....

.....

.....

after urbanisation

.....

.....

.....

.....

.....

.....

[6]

(ii) Explain how urbanisation would increase the likelihood of flooding within a river valley.

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

(iii) State **one** measure which can be used in a river valley to reduce the likelihood of flooding.

.....  
..... [1]

(b) Fig. 1.2 shows the position of the Marina Barrage in Singapore. Fig. 1.3 shows how the barrage works.

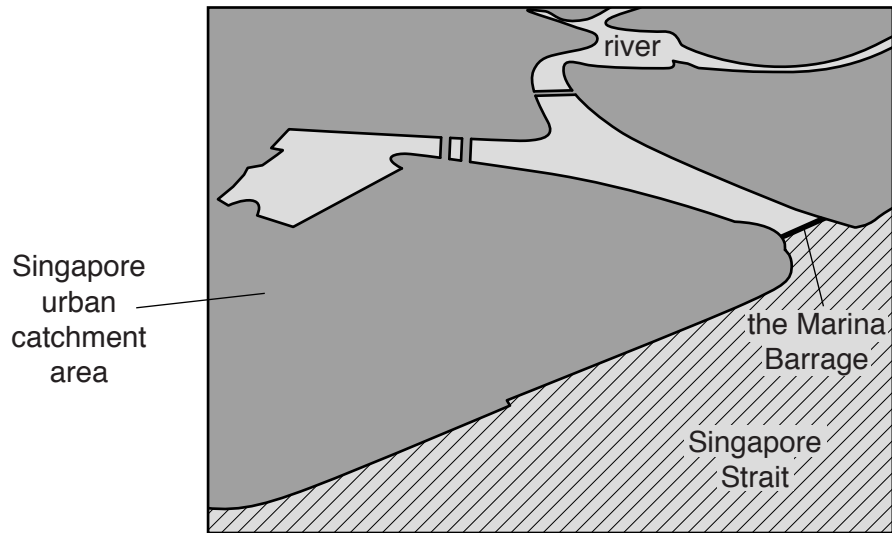


Fig. 1.2

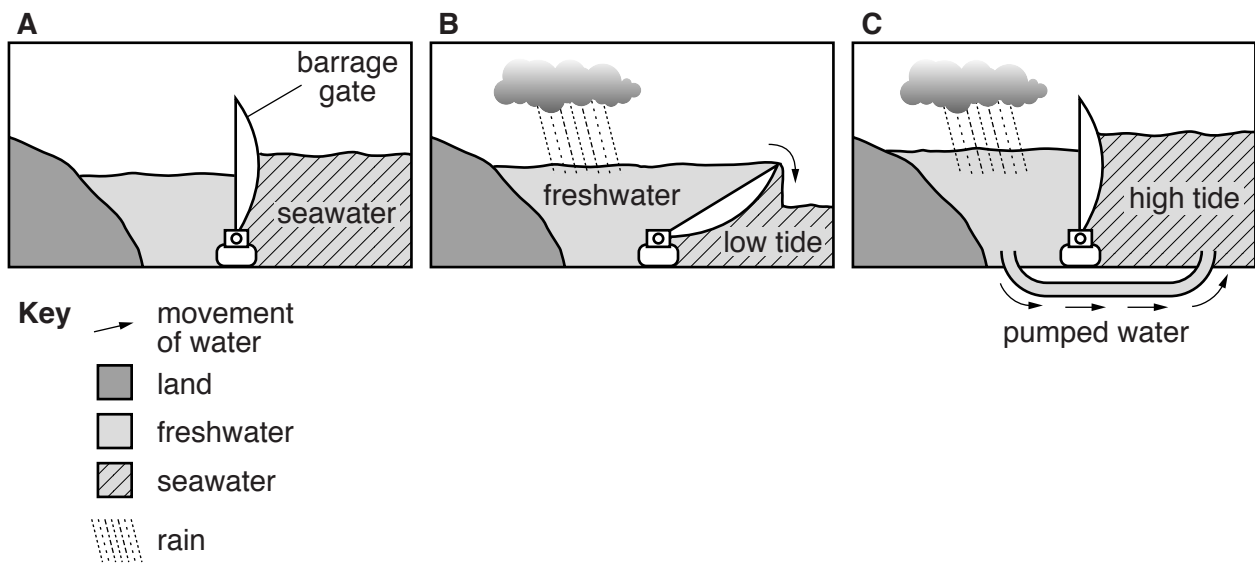


Fig. 1.3

(i) Using Fig. 1.2 and Fig. 1.3, explain how the Marina Barrage provides the following benefits:

- freshwater store
- flood prevention
- preventing the inundation of seawater.

freshwater store .....

.....  
.....  
.....

flood prevention .....

.....  
.....  
.....  
.....  
.....

preventing the inundation of seawater .....

.....  
.....  
.....  
.....  
.....

[8]

(ii) Suggest **one** environmental disadvantage of this type of barrage.

.....  
.....  
.....

[2]

[Total: 20]

2 (a) Fig. 2.1 shows information on a succession.

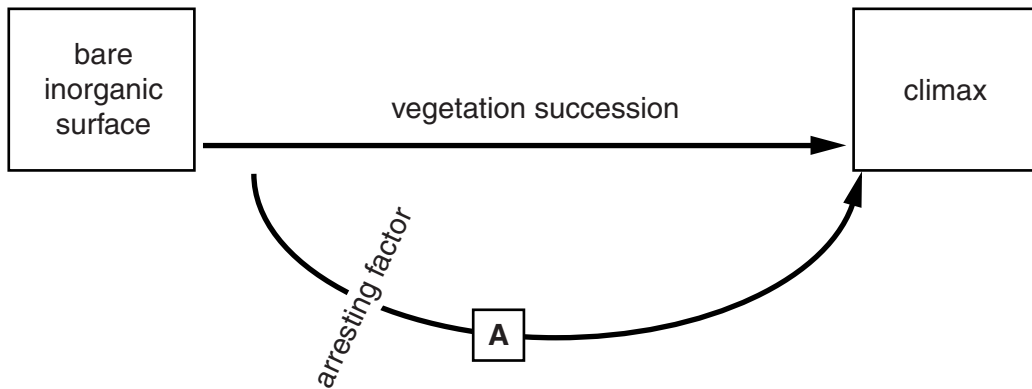


Fig. 2.1

(i) With reference to Fig. 2.1, state what is meant by the term a *vegetation succession*.

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

(ii) State the name given to the type of climax at **A** in Fig. 2.1, that results from an arresting factor.

..... [1]

(iii) Outline **two** ways in which human activity can arrest a vegetation succession.

.....  
.....  
.....  
.....  
.....  
.....  
.....  
..... [4]

(iv) Describe the impact of a natural event on a vegetation succession.

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

(v) Fig. 2.2 shows changes which have occurred in an area, following the removal of an arresting factor.

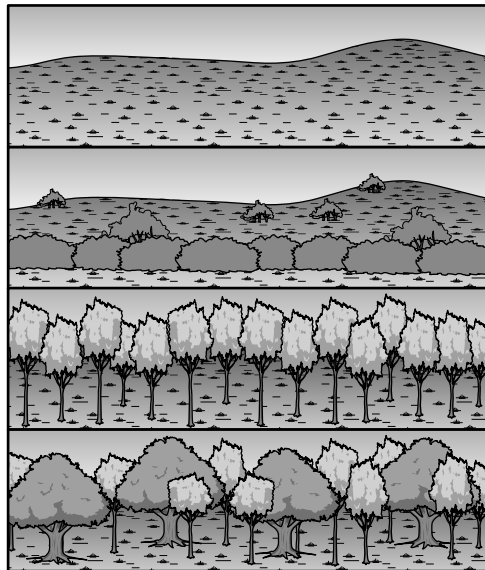
years after the removal of an arresting factor

0 grassland

10 woody shrubs

30 trees

70 mixed woodland



**Fig. 2.2**

Explain the changes shown in the area in Fig. 2.2 after the human arresting factor was removed.

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

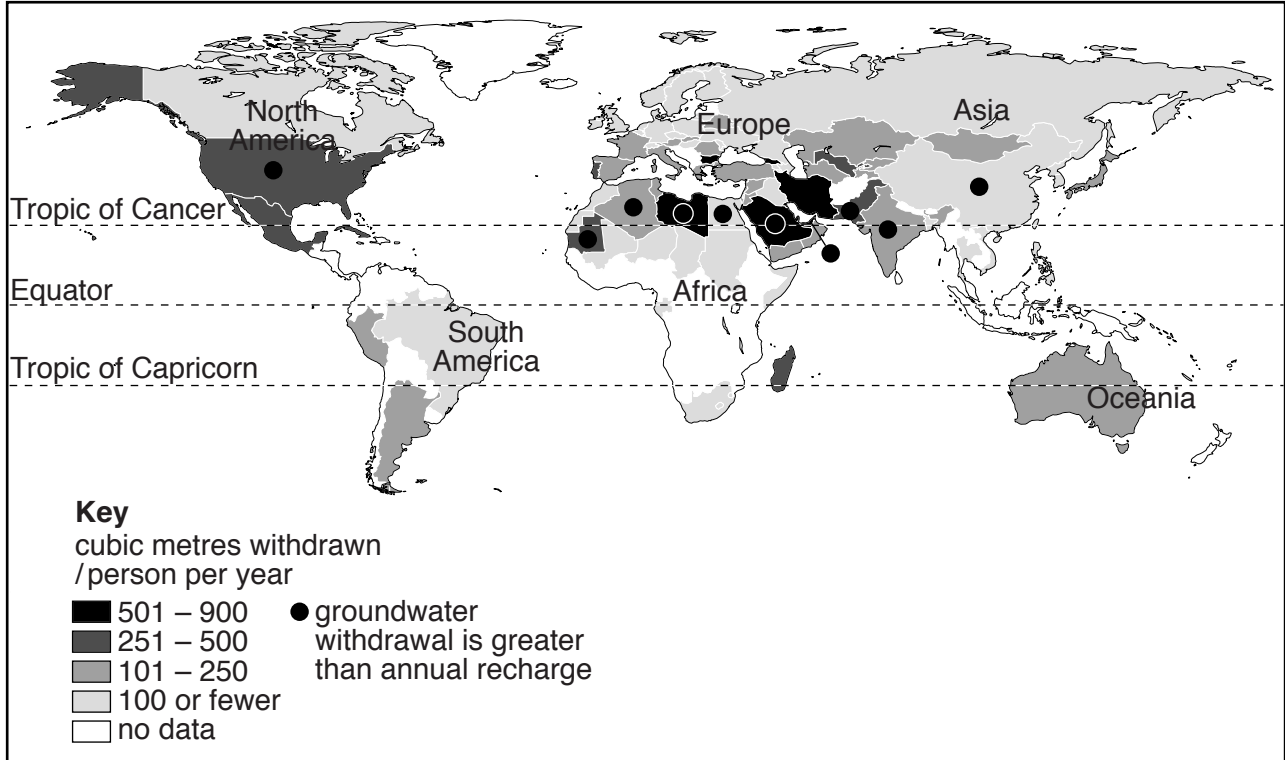




## Section B

Answer **one** question from this section.

- 3 (a) Fig. 3.1 shows groundwater withdrawals in cubic metres per person per year.



**Fig. 3.1**

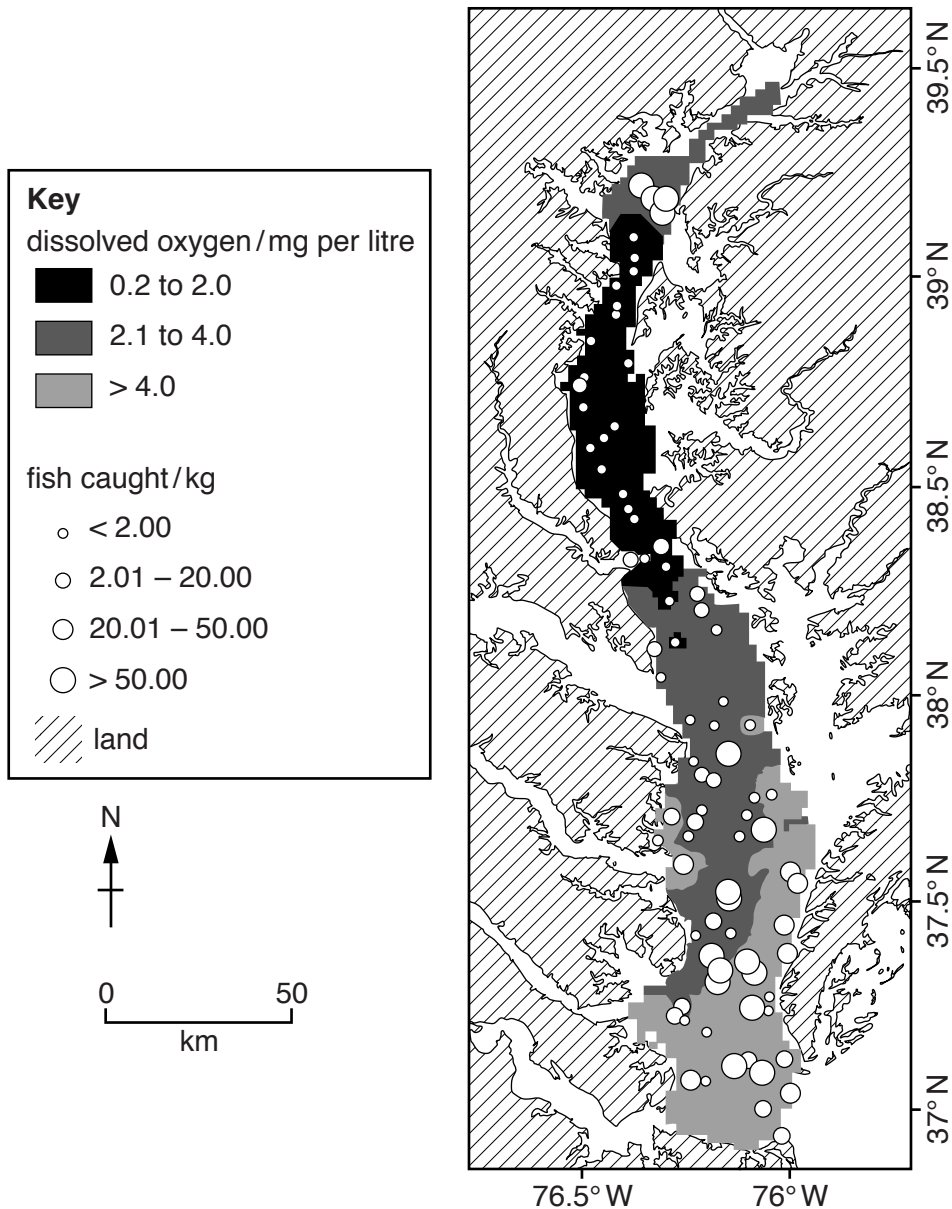
With reference to Fig. 3.1, briefly describe and explain the regional variation in the quantities of water withdrawn from groundwater. [10]

- (b) There are growing concerns regarding the consequences of the depletion and degradation of groundwater supplies due to increasing human demand on groundwater.

Explain the risks to groundwater supply and the issues arising from their depletion and degradation. Using examples with which you are familiar, assess to what extent measures taken to manage these problems are effective. [30]

[Total: 40]

- 4 (a) Fig. 4.1 shows the results of research into the mass of fish caught and dissolved oxygen concentrations, for Chesapeake Bay (United States of America).



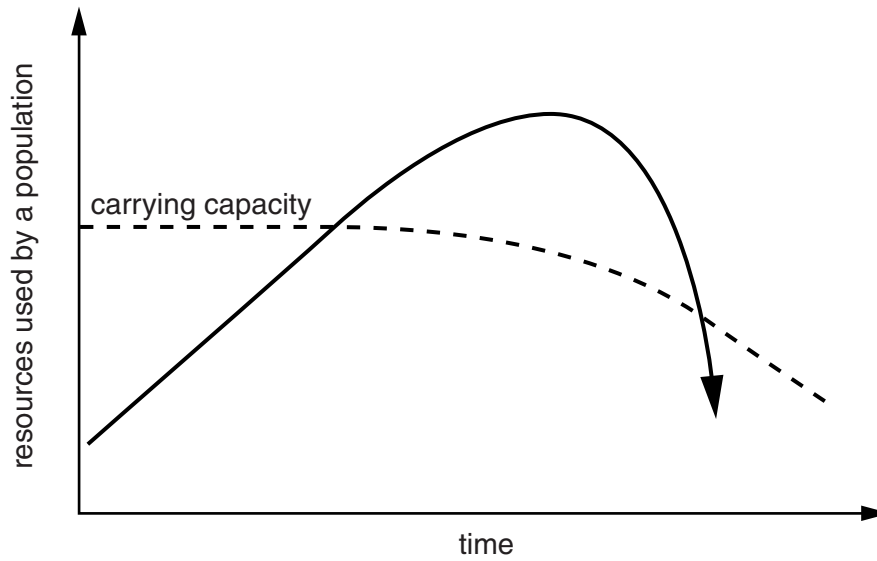
**Fig. 4.1**

With reference to Fig. 4.1, briefly describe and explain the relationship between the mass of fish caught and dissolved oxygen concentrations. [10]

- (b) Using an example of an ecosystem with which you are familiar, describe and evaluate the measures that have been used to reduce the ecological impact of human activity by preventing and controlling pollution. [30]

[Total: 40]

- 5 (a) Fig. 5.1 shows a relationship between the resources used by a population over time and the carrying capacity.



**Fig. 5.1**

With reference to Fig. 5.1, describe and explain the relationship between the use of resources by a population and the carrying capacity. [10]

- (b) With reference to examples from both LEDCs and MEDCs, evaluate policies that aim to achieve a balance between population size and a country's resources. [30]

[Total: 40]

**BLANK PAGE**

---

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge International Examinations Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at [www.cie.org.uk](http://www.cie.org.uk) after the live examination series.

Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.