

CANDIDATE  
NAME

CENTRE  
NUMBER

--	--	--	--	--

CANDIDATE  
NUMBER

--	--	--	--

**ENVIRONMENTAL MANAGEMENT**

**8291/22**

Paper 2 Hydrosphere and Biosphere

**May/June 2017**

**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 in this section.  
Write your answers in the spaces provided on the question paper.

**Section B**

Answer **one** question from this section.  
Write your answers 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.

	For Examiner's Use
<b>Section A</b>	/
1	
2	
<b>Section B</b>	/
<b>Total</b>	

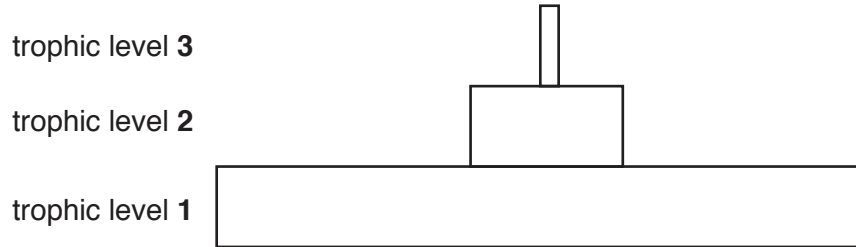
This document consists of **12** printed pages.

**Section A**

Answer **all** questions in this section.

Write your answers in the spaces provided.

- 1 (a) Fig. 1.1 shows a pyramid of biomass with three trophic levels.



**Fig. 1.1**

- (i) What is meant by the terms *biomass* and *trophic level*?

biomass .....

.....

trophic level .....

.....

[2]

(ii) State the names of the trophic levels shown in Fig. 1.1.

trophic level 3 .....

trophic level 2 .....

trophic level 1 .....

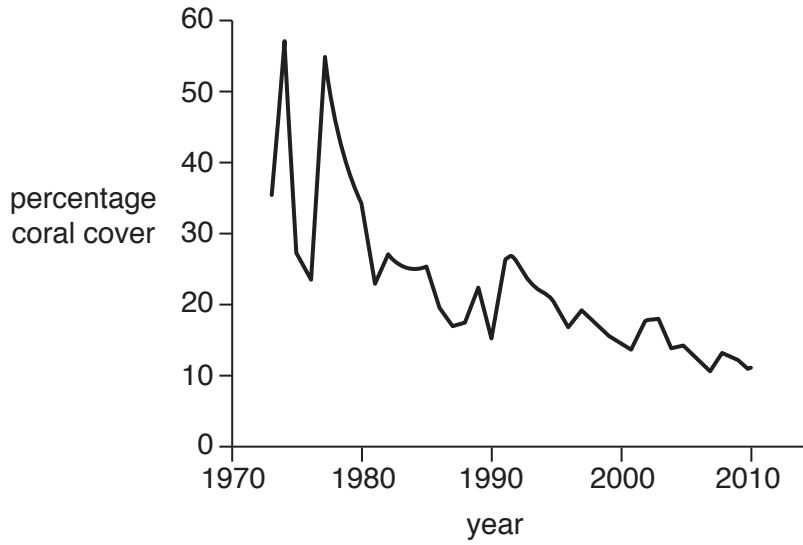
[3]

(iii) Describe the relationship between the trophic levels shown in the pyramid in Fig. 1.1 and explain its shape.

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

[4]

(b) Fig. 1.2 shows the change in percentage coral cover on Caribbean coral reefs from 1973 to 2010.



**Fig. 1.2**

(i) Using the data from Fig. 1.2, describe the change in percentage coral cover from 1973 to 2010.

.....

.....

.....

.....

.....

.....

.....[3]



2 (a) Fig. 2.1 shows part of a water cycle in a tropical rainforest.

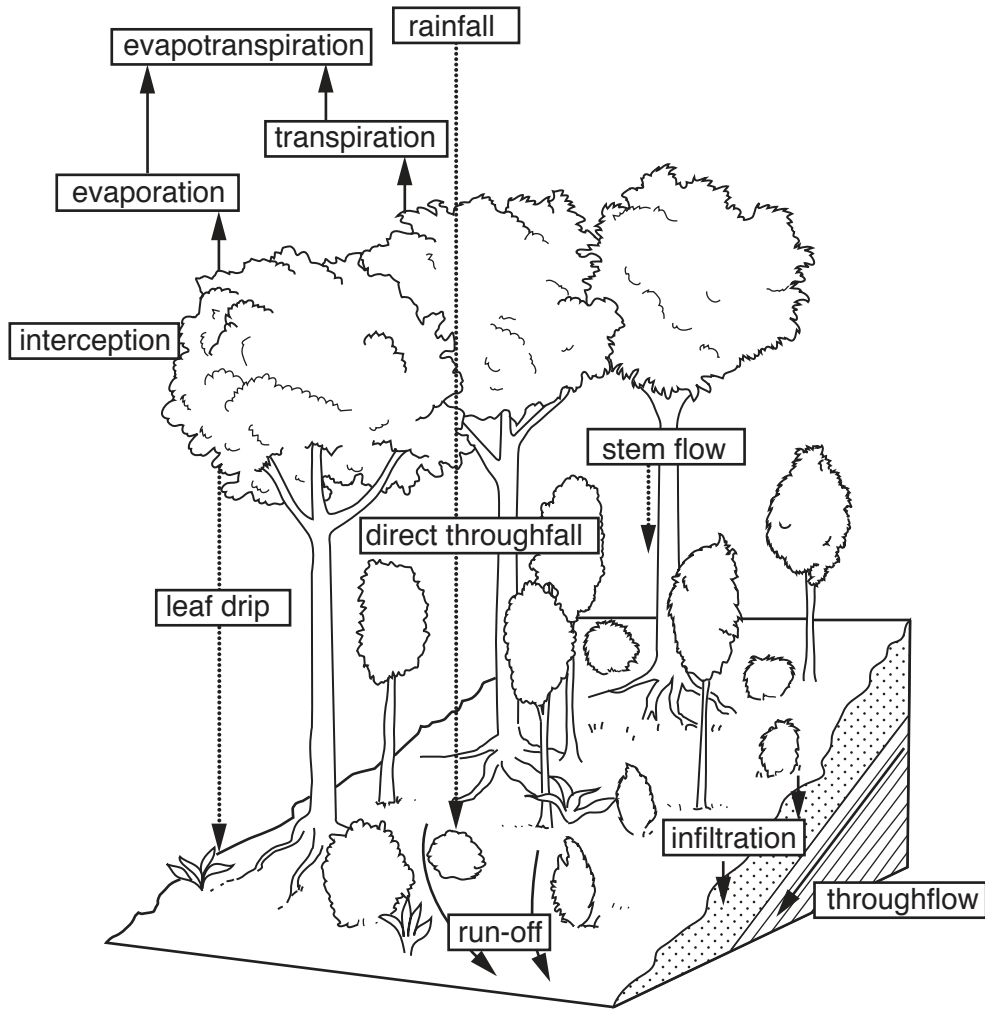


Fig. 2.1

(i) State what is meant by the following terms:

evaporation.....

.....

interception.....

.....

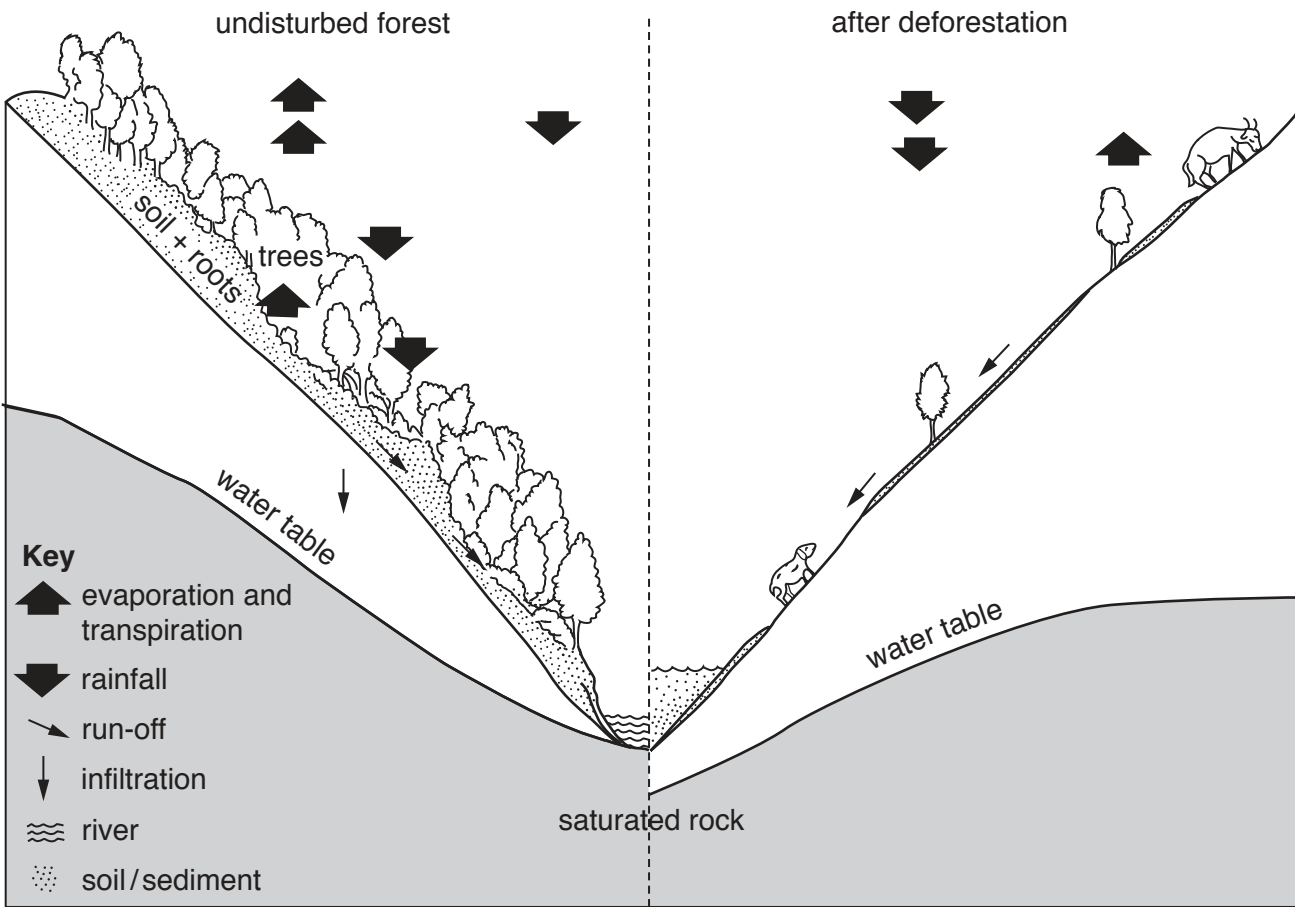
run-off. ....

.....

[3]



(b) Fig. 2.2 shows a section of a slope containing undisturbed forest on the left and the same slope after deforestation on the right.



**Fig. 2.2**

(i) Using Fig. 2.2, describe the effect of deforestation on the local water cycle.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

[6]



(ii) Suggest methods that can be used to reduce the impact of deforestation on the local environment.

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

[5]

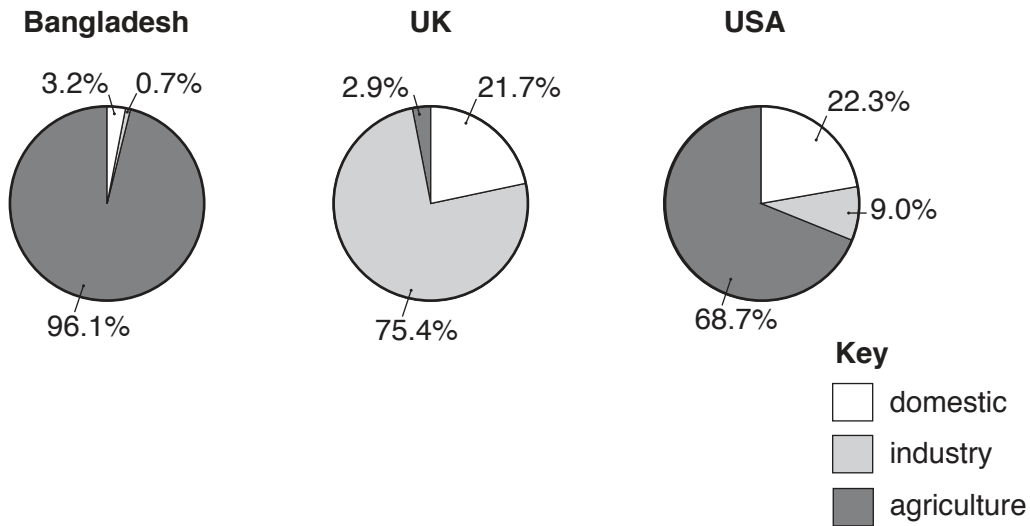
[Total: 20]

## Section B

Answer **one** question from this section.

Write your answers on the separate answer paper provided.

- 3 Fig. 3.1 shows the percentage share of total water usage in three countries.



**Fig. 3.1**

- (a) Suggest reasons for the differences in the percentage share of total water usage in the three countries. [10]
- (b) For either a LEDC or MEDC, assess how effectively it manages water for use by humans. [30]

[Total: 40]

- 4 Fig. 4.1 shows a mangrove ecosystem, which is an example of a coastal water ecosystem.

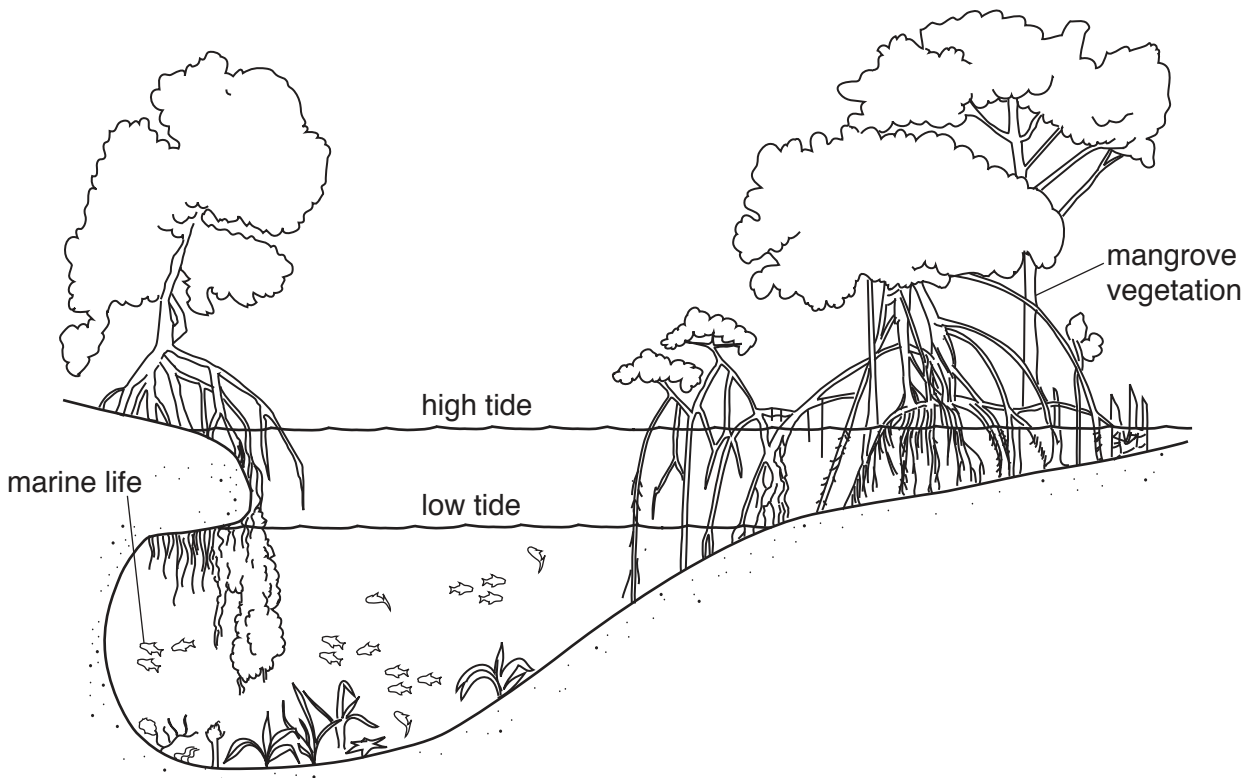
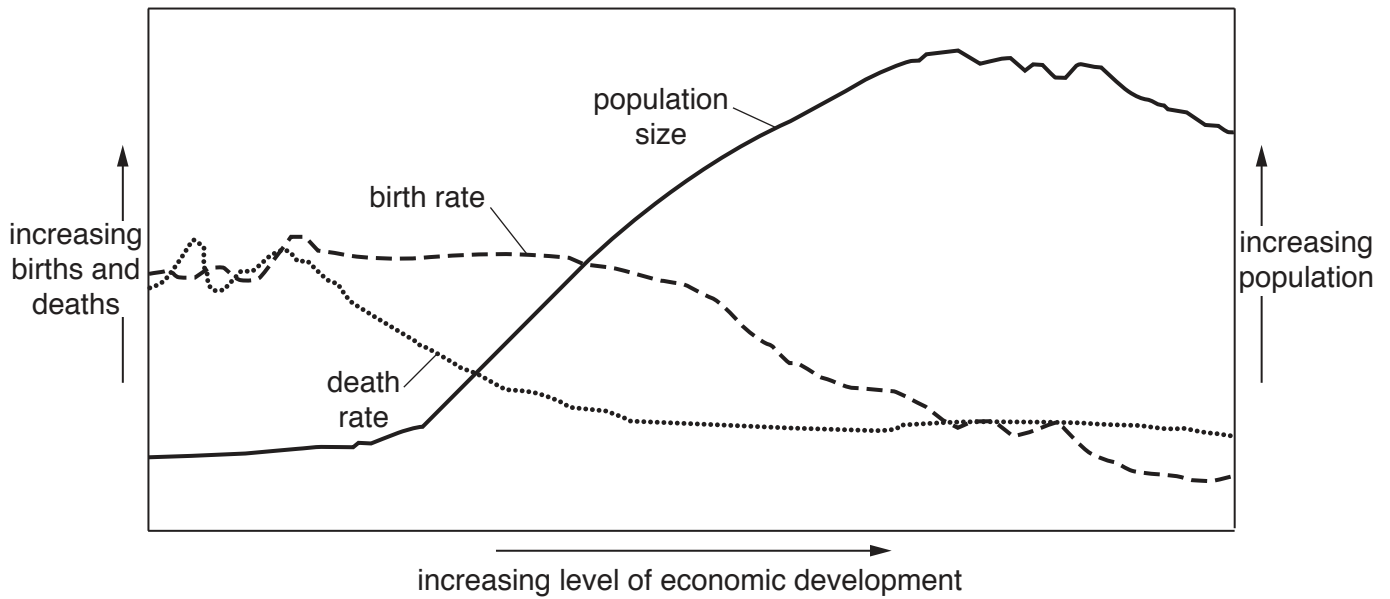


Fig. 4.1

- (a) With reference to the ecosystem shown in Fig. 4.1, describe how **two** biotic and **two** abiotic factors influence the structure of the ecosystem. [10]
- (b) With reference to examples, assess the effectiveness of international protocols and organisations that have been important in highlighting the preservation of the biosphere. [30]

[Total: 40]

- 5 Fig. 5.1 is a model showing the relationship between death rate, birth rate, population size and increasing level of economic development.



**Fig. 5.1**

- (a) Suggest how the model indicates changing socio-economic conditions. [10]
- (b) With reference to examples, assess the extent to which LEDCs and MEDCs balance resources with population growth. [30]

[Total: 40]

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.