

Cambridge International AS Level

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ENVIRONMENTAL MANAGEMENT

8291/22

Paper 2 Hydrosphere and Biosphere

October/November 2020

1 hour 30 minutes

You must answer **Section A** on the question paper and **Section B** on the answer booklet/paper you have been given.

You will need: Answer booklet/paper

INSTRUCTIONS

- Section A: answer **all** questions. Write your answer to each question in the space provided on the question paper.
- Section B: answer **one** question. Write your answer on the separate answer booklet/paper provided.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- You should show all your working and use appropriate units.
- At the end of the examination, fasten all your work together. Do **not** use staples, paper clips or glue.

INFORMATION

- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [].

For Examiner's use	
Section A	/
1	
2	
Section B	/
Total	

This document has **16** pages. Blank pages are indicated.

Section A

Answer **all** questions in this section.

Write your answers in the spaces provided.

1 (a) Fig. 1.1 shows the various stores of water found in the hydrosphere.

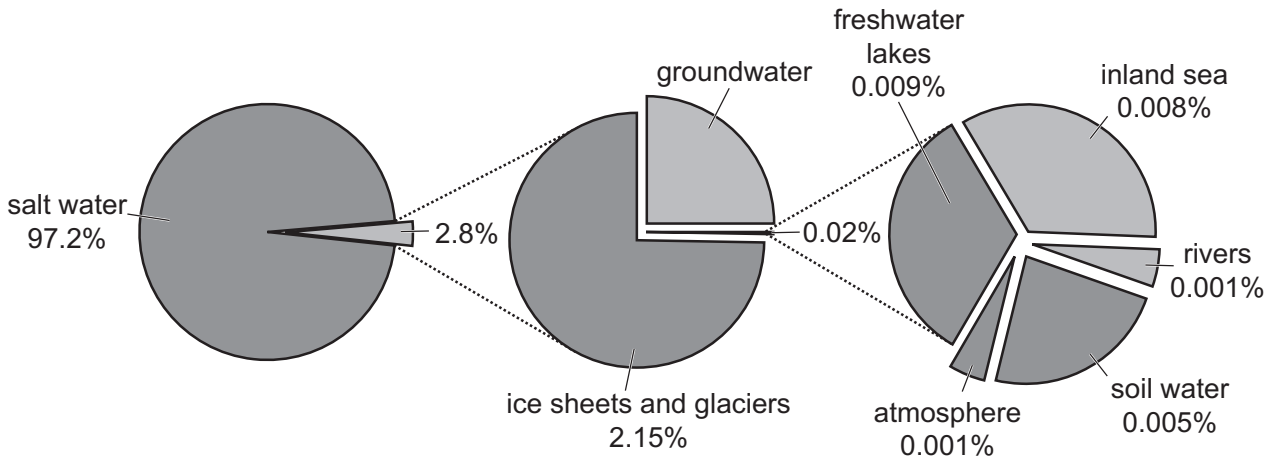


Fig. 1.1

(i) Fig. 1.1 shows that 97.2% of water in the hydrosphere is salt water.

State the type of water that makes up the remaining 2.8%.

..... [1]

(ii) Calculate the percentage of water found as groundwater in the hydrosphere.

..... % [1]

(iii) Describe **two** environmental problems which might be caused by the melting of ice sheets and glaciers.

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..... [4]

(b) Aquifers are underground stores of groundwater. The three types of aquifer are confined, unconfined and perched.

(i) Complete Table 1.1 by matching the type of aquifer to the correct description.

confined unconfined perched

Table 1.1

description	type of aquifer
an aquifer which is found above the water table where an impermeable layer of rock or material lies above the regional water table	
an aquifer where the water from the ground above is prevented from seeping in by a layer of impermeable rock or material lying above the aquifer	
an aquifer where water from the ground directly above can seep into the aquifer	

[2]

(ii) State **two** causes of groundwater depletion from aquifers.

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..... [2]

(iii) Explain **two** strategies to conserve groundwater in aquifers.

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..... [4]

(c) As the population of an area increases, the demands for water change from those of a rural area to those of an urban area.

Describe and explain the changes in demand for water as an area becomes more urbanised.

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..... [5]

(d) The creation of an artificial reservoir can provide access to water for many people.

Suggest **one disadvantage** of the creation of an artificial reservoir.

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

[Total: 20]

2 (a) Fig. 2.1 is a theoretical graph of population growth.

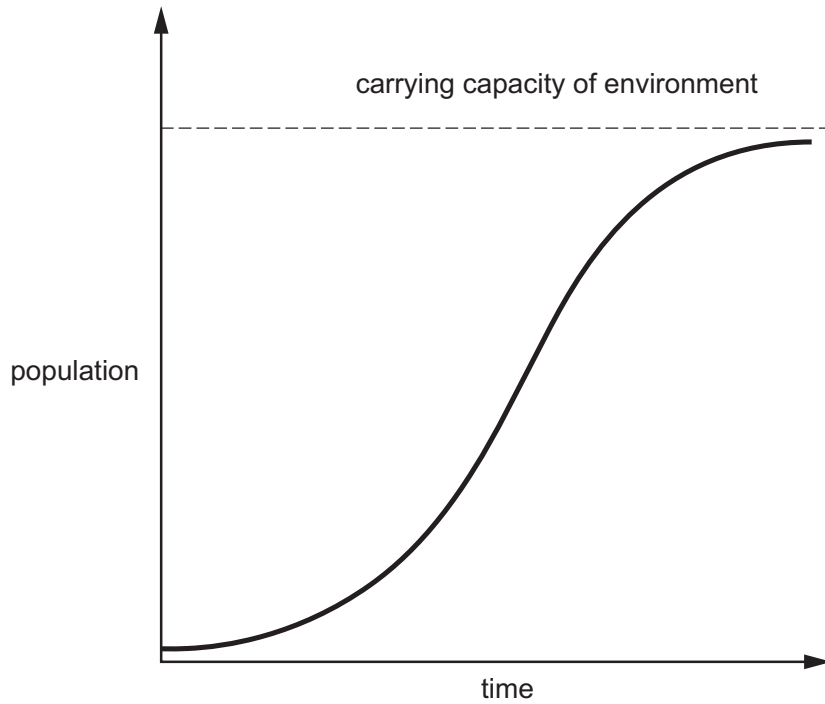


Fig. 2.1

(i) Define *carrying capacity*.

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..... [2]

(ii) Describe the changes in population over time shown in Fig. 2.1.

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

(b) Fig. 2.2 shows the global population and annual population growth rate from 1900 to 2050 (predicted).

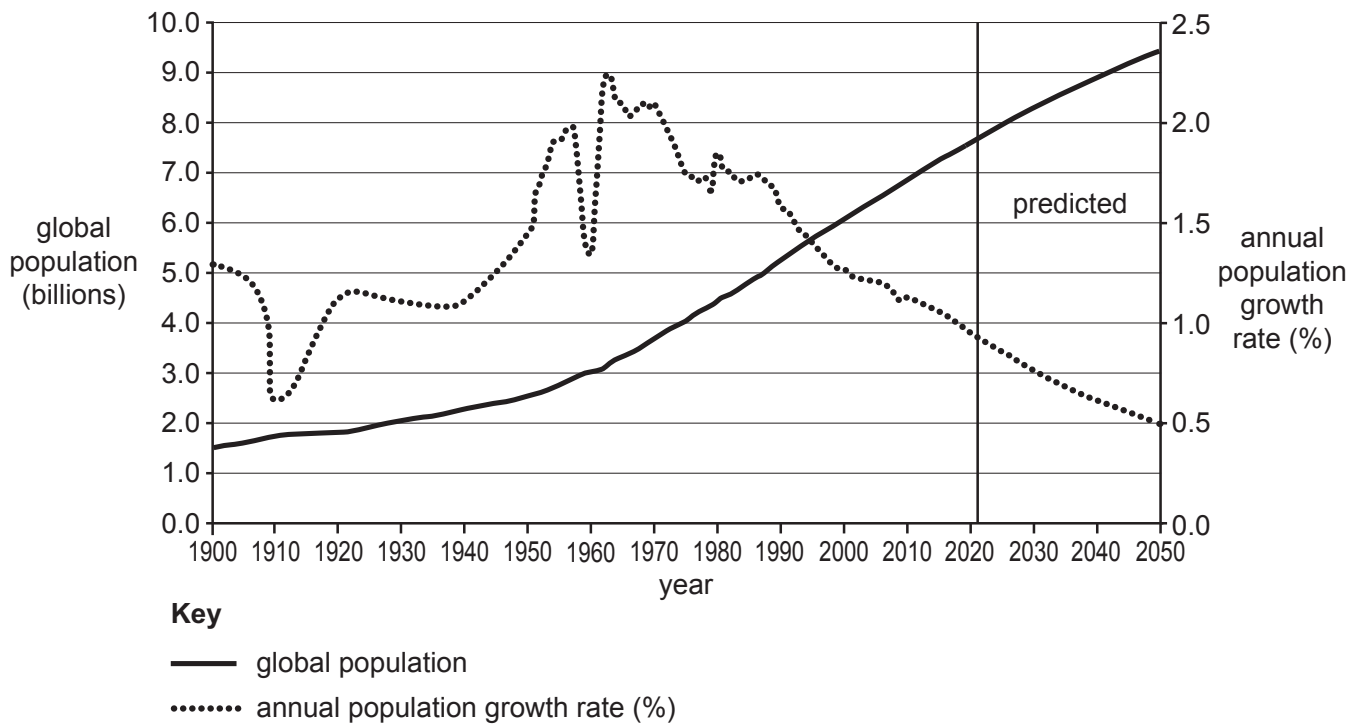


Fig. 2.2

(i) Describe the predicted trends in global population and annual population growth rate from 2021 to 2050 shown in Fig. 2.2.

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..... [2]

(ii) Suggest **two** factors which are likely to lead to the predicted trends shown in Fig. 2.2.

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..... [2]

(iii) Malthus predicted a limit to human population growth. Suggest reasons why this has **not** happened.

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..... [4]

(c) Fig. 2.3 shows population pyramids for two countries, **A** and **B**, with contrasting levels of economic development.

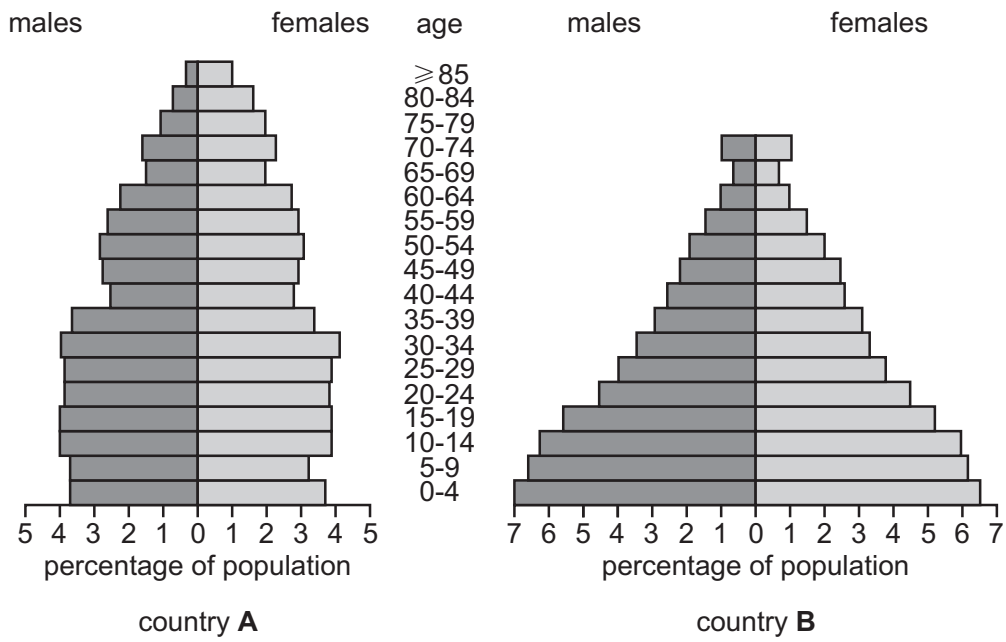


Fig. 2.3

(i) Explain the differences in the shape of the two population pyramids shown in Fig. 2.3.

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..... [4]

(ii) Explain why country **B** is likely to experience a rapid increase in population in the future.

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..... [4]

[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 distribution of eutrophic and hypoxic (dead zone) areas of coastal waters of Europe.

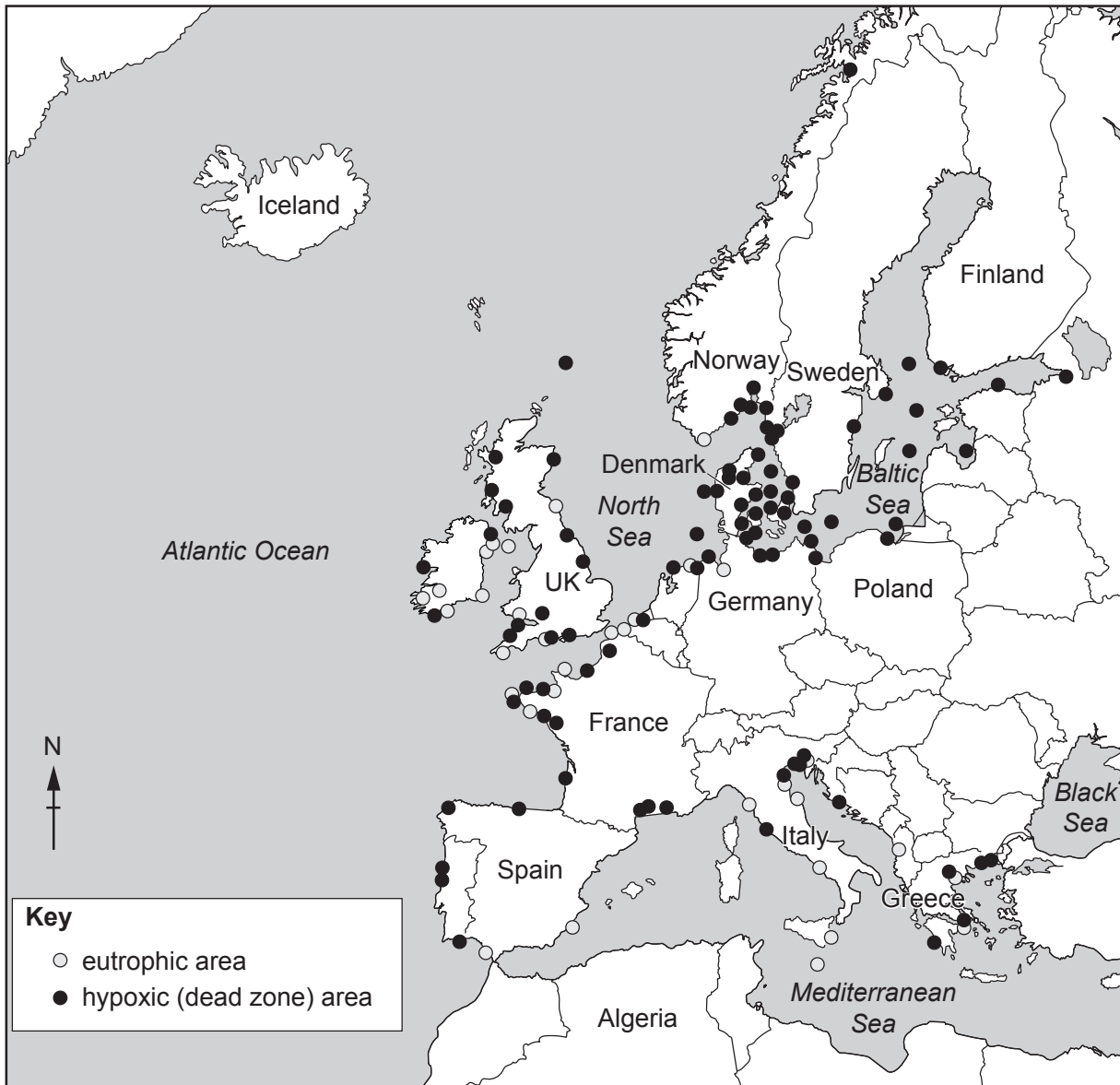
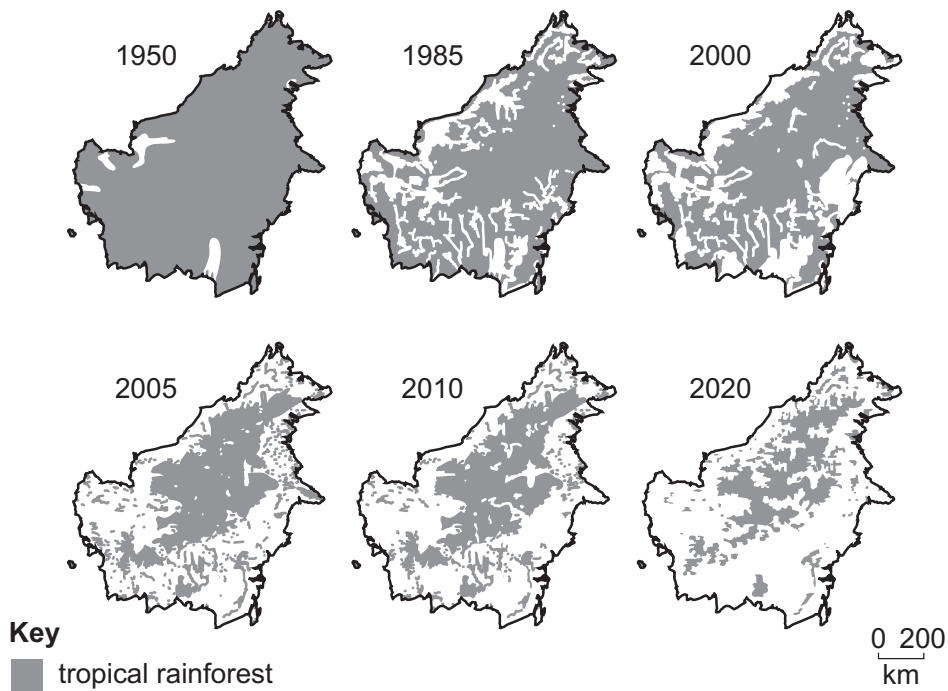


Fig. 3.1

- (a) Describe and suggest reasons for the distribution of eutrophic and hypoxic (dead zone) areas of coastal waters shown in Fig. 3.1. [10]
- (b) Using examples, assess the strategies used to reduce pollution which leads to eutrophic and hypoxic (dead zone) areas of coastal waters. [30]

[Total: 40]

4 Fig. 4.1 is a series of maps showing the extent of the tropical rainforest in Borneo from 1950 to 2020 with a pie chart showing some of the causes of the deforestation.



causes of deforestation in Borneo

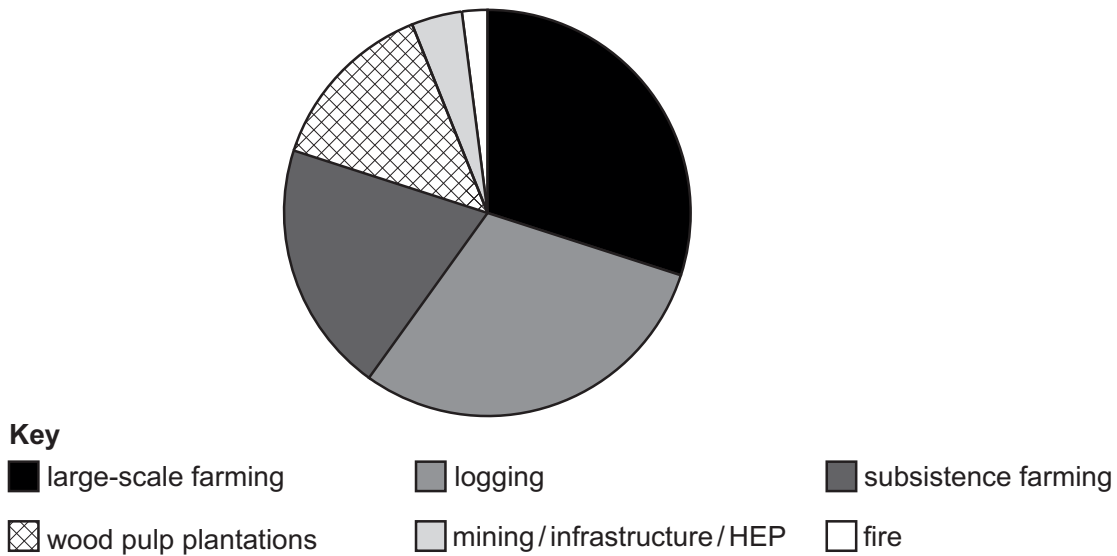


Fig. 4.1

- (a) With reference to Fig. 4.1, describe the changes to the extent of the tropical rainforest in Borneo between 1950 and 2020. Suggest the contribution made by the different causes shown. [10]
- (b) Assess local, national and international strategies to manage the causes and effects of deforestation. [30]

[Total: 40]

- 5 Fig. 5.1 shows the location of Jordan in the Middle East, and a photograph of the Jordanian Southern Desert, an arid area.

Jordan is almost totally landlocked having only 25 km of coast and a single port.

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Fig. 5.1

- (a) Outline the problems faced by people living in arid countries such as Jordan in providing water for industrial, domestic and agricultural use. [10]
- (b) Assess the success of methods used to supply water for industrial, domestic and agricultural purposes in countries with contrasting levels of natural water supply. [30]

[Total: 40]

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