Cambridge Assessment International Education

Cambridge International AS Level

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

8059926231

ENVIRONMENTAL MANAGEMENT **8291/21**

Paper 2 Hydrosphere and Biosphere **May/June 2021**

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 **12** pages. Any blank pages are indicated.

[Turn over

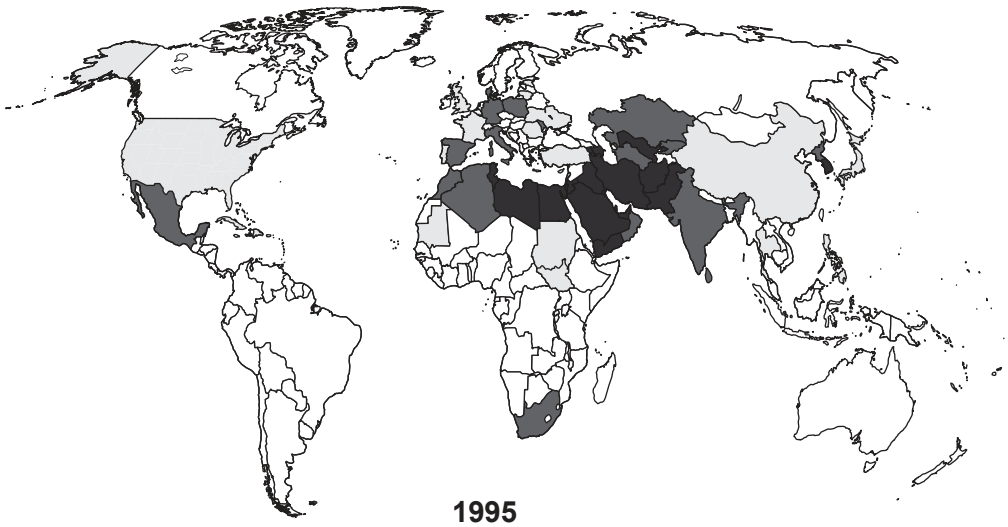
Section A

Answer **all** questions in this section.

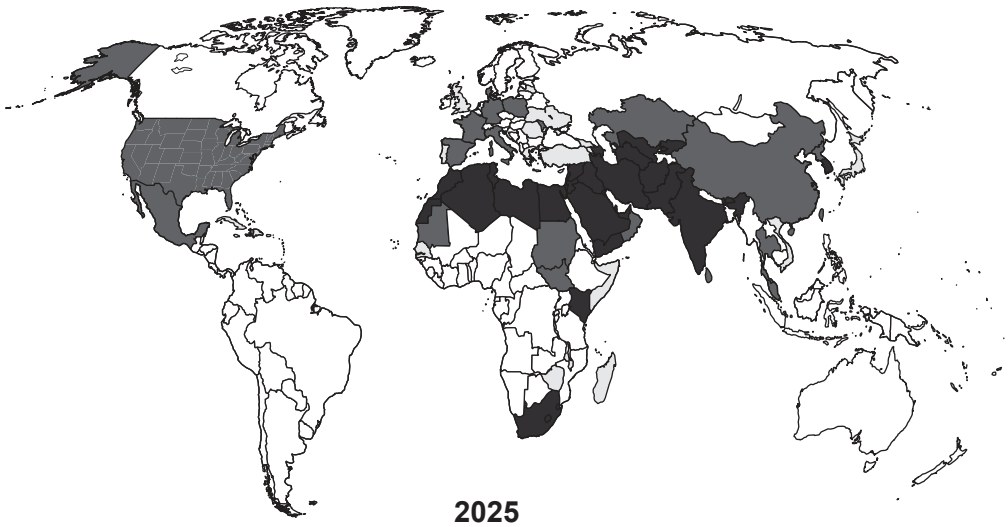
Write your answers in the spaces provided.

1 **(a)** Water withdrawal is the total volume of water removed from a water source.

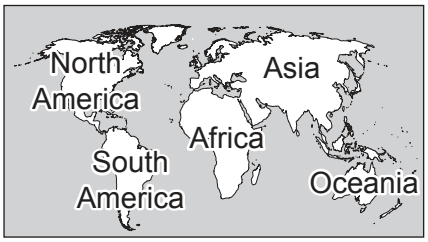
Fig. 1.1 shows water withdrawal as a percentage of total water available for 1995 and predicted for 2025.



1995



2025



Water withdrawal as a percentage of total water available

- more than 40%
- from 40% to 20%
- from 20% to 10%
- less than 10%

Fig. 1.1

(i) Describe changes in water withdrawal in 1995 and predicted for 2025 shown in Fig. 1.1.

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..... [3]

(ii) Suggest **two** causes of the predicted changes shown in Fig. 1.1.

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..... [2]

(iii) Describe **two** strategies to manage the conservation of water.

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..... [2]

(b) Fig. 1.2 shows the percentage of water consumption by sector in Egypt and the USA in 2019.

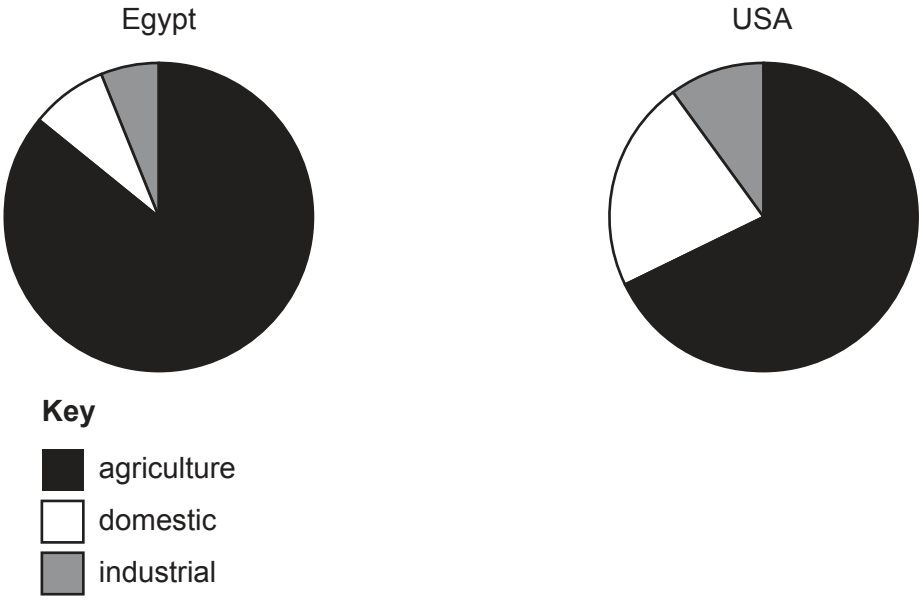

Fig. 1.2

(i) Suggest **one** reason for the difference in water consumption in Egypt and the USA in the domestic and industrial sectors shown in Fig. 1.2.

domestic .....

.....

industrial .....

..... [2]

(ii) Egypt supplies some of its freshwater by desalinisation.

Explain how the process of desalinisation produces freshwater from seawater.

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..... [4]

(iii) Describe advantages and disadvantages of using desalinisation to supply freshwater.

advantages .....

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disadvantages .....

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..... [4]

(c) Approximately 2% of the world's water is freshwater.

Explain how climate change impacts the availability of freshwater.

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..... [3]

[Total: 20]

2 **(a)** Fig. 2.1 shows the word equation for the process of photosynthesis in green plants.

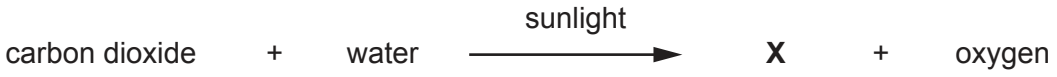

Fig. 2.1

(i) State what **X** represents in Fig. 2.1.

..... [1]

(ii) Sunlight is the source of energy for the process of photosynthesis.

Explain how green plants use sunlight in photosynthesis.

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..... [2]

(iii) Explain the effect of increased carbon dioxide on the rate of photosynthesis.

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..... [3]

(iv) State **one** abiotic factor and **one** biotic factor that affects the growth of green plants.

abiotic .....

biotic ..... [2]

(b) Fig. 2.2 shows the distribution of tropical rainforest in the Americas.

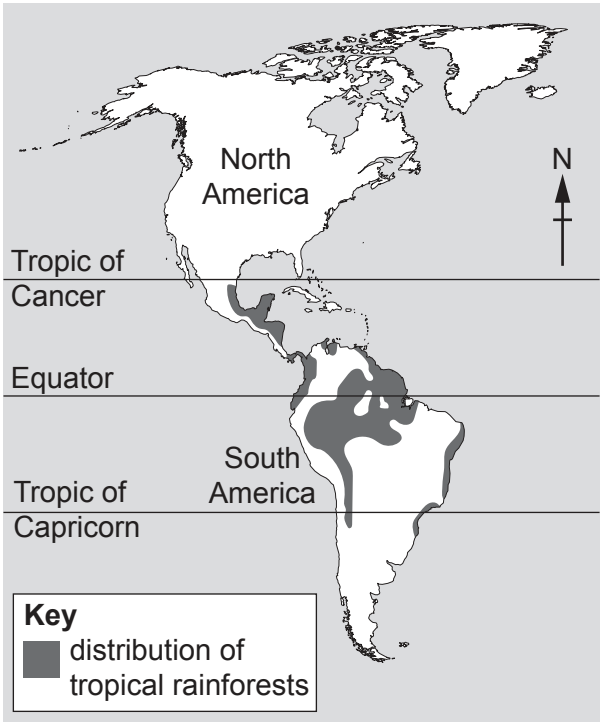

Fig. 2.2

(i) Describe the distribution of tropical rainforest shown in Fig. 2.2.

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..... [2]

(ii) Explain why there is very little leaf litter on the floor of a tropical rainforest.

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..... [3]

(iii) Explain why there is a large amount of biodiversity in a tropical rainforest.

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..... [3]

(iv) Explain the effects of land clearance in an area of tropical rainforest, other than on biodiversity.

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..... [4]

[Total: 20]

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Section B

Answer **one** question from this section.

Write your answers on the separate answer paper provided.

3 Fig. 3.1 is a report about large-scale loss in flying insect numbers worldwide.

Ecological Warning as Insect Population Numbers Fall

The number of flying insects has fallen by 75% worldwide. Three-quarters of flying insects in nature reserves across Germany have vanished in 25 years, with serious implications for ecosystems.

Humans are making vast areas of land inhospitable to most forms of life. If we lose the flying insects then ecosystems are going to collapse. Scientists suggest reducing the use of pesticides and fertilisers and reversing the draining of wetlands.

Fig. 3.1

(a) With reference to Fig. 3.1, describe the causes and effects of the large-scale loss of flying insects. [10]

(b) Using examples, evaluate strategies to manage the conservation of endangered species. [30]

[Total: 40]

4 Fig. 4.1 is a map showing the river Ganges as it flows from the Himalayas, through India and Bangladesh to the Bay of Bengal.

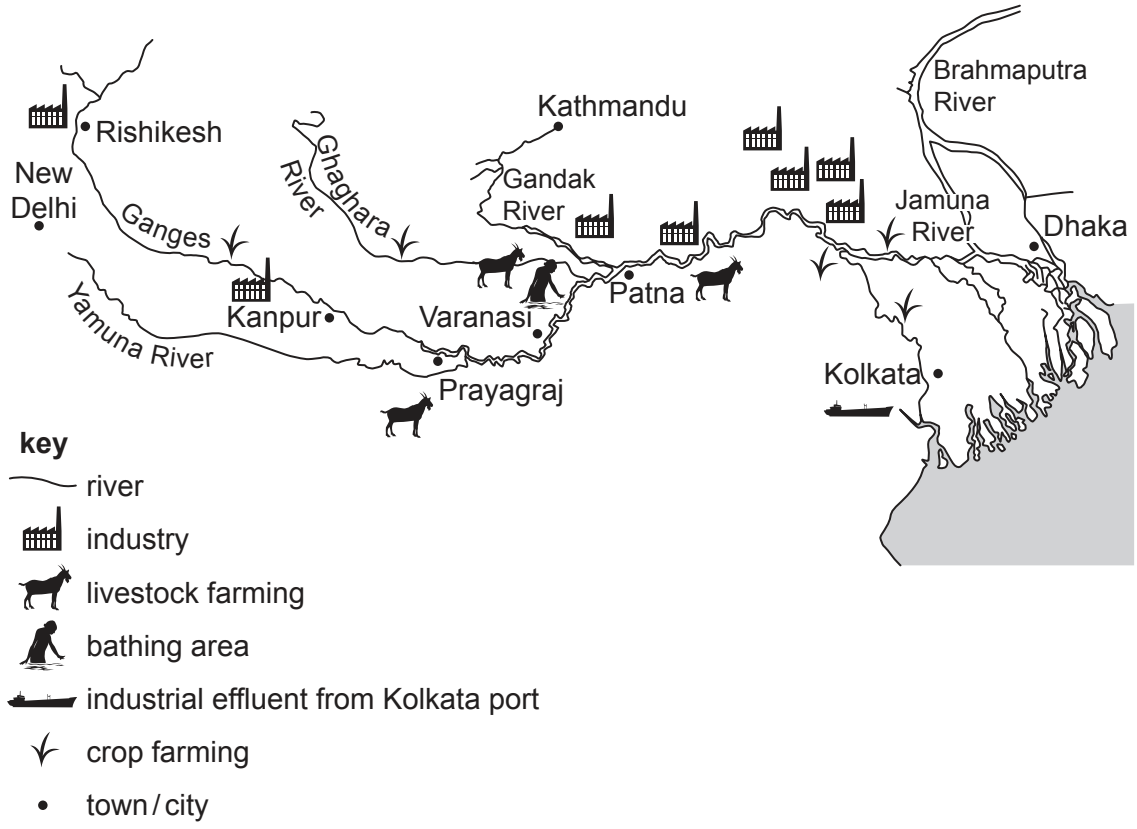

Fig. 4.1

(a) With reference to Fig. 4.1, explain why the river Ganges has large areas of severely polluted water. [10]

(b) To what extent can strategies to manage waste control reduce pollution of rivers? Use examples of local and regional policies. [30]

[Total: 40]

5 Fig. 5.1 is a diagram of a 'green city'.

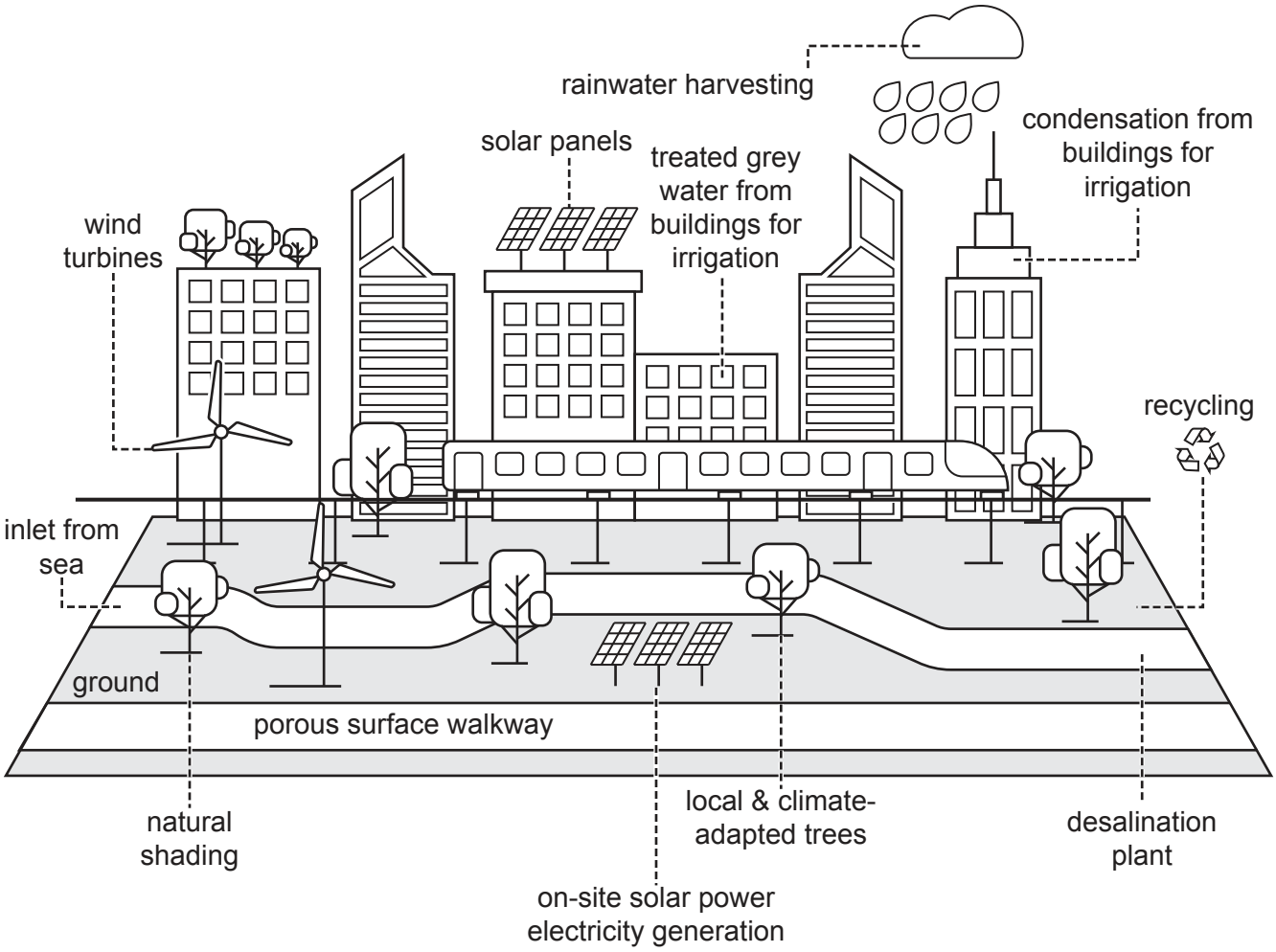

Fig. 5.1

(a) With reference to Fig. 5.1, explain the advantages and disadvantages of the development of 'green cities'. [10]

(b) Using examples, evaluate the success of international protocols in managing the effects of an increasing human population on the biosphere. [30]