



CANDIDATE
NAME

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CENTRE
NUMBER

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CANDIDATE
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8291/11

May/June 2022

1 hour 45 minutes

You must answer on the question paper.

No additional materials are needed.

- Section A: answer **all** questions.
- Section B: answer **one** question.
- 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.
- Write your answer to each question in the space provided.
- 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.

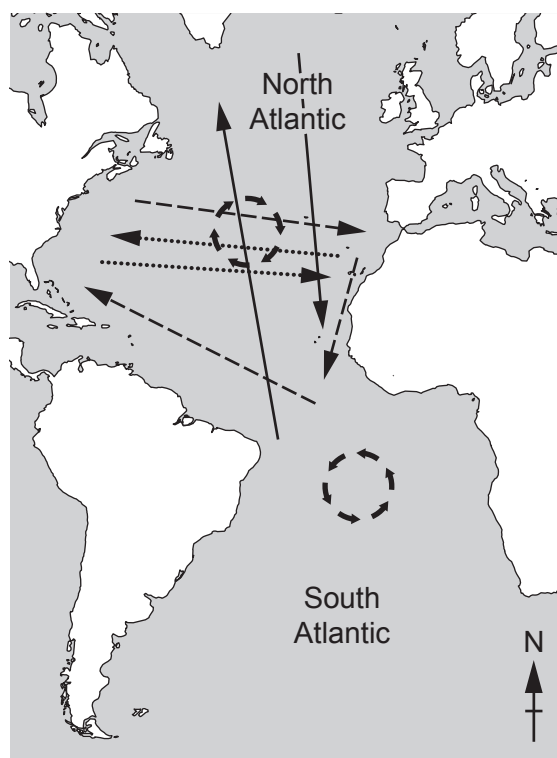
- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [].

This document has **20** pages. Any blank pages are indicated.

Section A

Answer **all** questions in this section.

- 1 (a) Fig. 1.1 shows the migration routes of three aquatic animals and the position of two mid-ocean gyres. A gyre is a very large system of circulating water which traps plastic waste brought by ocean currents to form polluted areas.

**Key**

- whale
- - -→ shark
-→ turtle
- mid-ocean gyre

Fig. 1.1

- (i) Suggest **two** possible sources of the plastic pollution found in the mid-ocean gyres.

1

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2

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[2]

- (ii) Suggest **one** way that plastic pollution in the mid-ocean gyres might affect migrating aquatic animal species.

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..... [2]

- (iii) Describe **two** strategies to manage the reduction in plastic waste entering the oceans.

strategy

description

.....

.....

strategy

description

.....

.....

[4]

(b) Fig. 1.2 shows a food web for the North Atlantic Ocean.

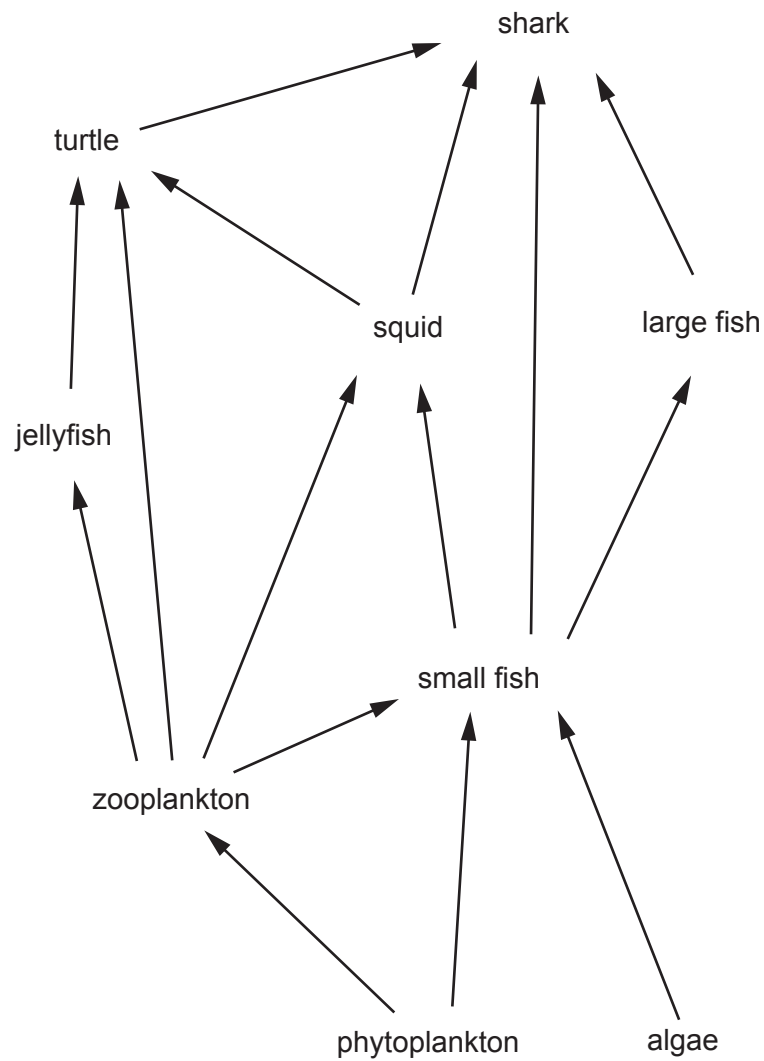


Fig. 1.2

(i) Identify an organism feeding at more than one trophic level shown in Fig. 1.2.

..... [1]

(ii) State the trophic level with the least energy shown in Fig. 1.2.

..... [1]

- (iii) Suggest **one** effect the plastic pollution in the North Atlantic Ocean could have on the population of squid in the food web shown in Fig. 1.2.

Give a reason for your answer.

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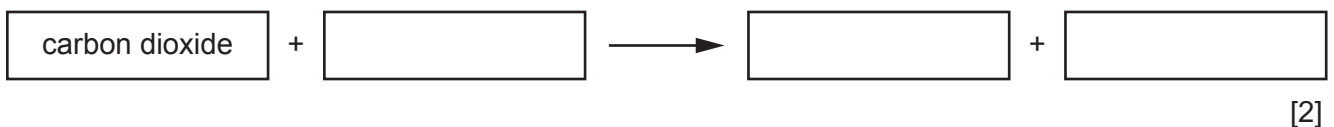
.....

..... [2]

[Total: 12]

- 2 (a) Large areas of the tropical rainforest in Brazil and the forests and brushlands in Australia were destroyed by wild fires in 2019. The destruction had serious effects on the plants and animals in these ecosystems.

- (i) Complete the word equation for photosynthesis.



- (ii) Carbon dioxide is a limiting factor in the rate of photosynthesis.

Describe what is meant by the term limiting factor.

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..... [2]

- (iii) The combustion of trees by wild fires releases a large amount of carbon dioxide into the atmosphere.

Describe the impact of this increased release of carbon dioxide.

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..... [4]

- (b) Suggest the impact of wild fires on the growth of plants.

Give reasons for your answers.

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..... [5]

[Total: 13]

- 3 Fig. 3.1 shows the contribution of different sources of energy to the total amount of electricity generated in three countries.

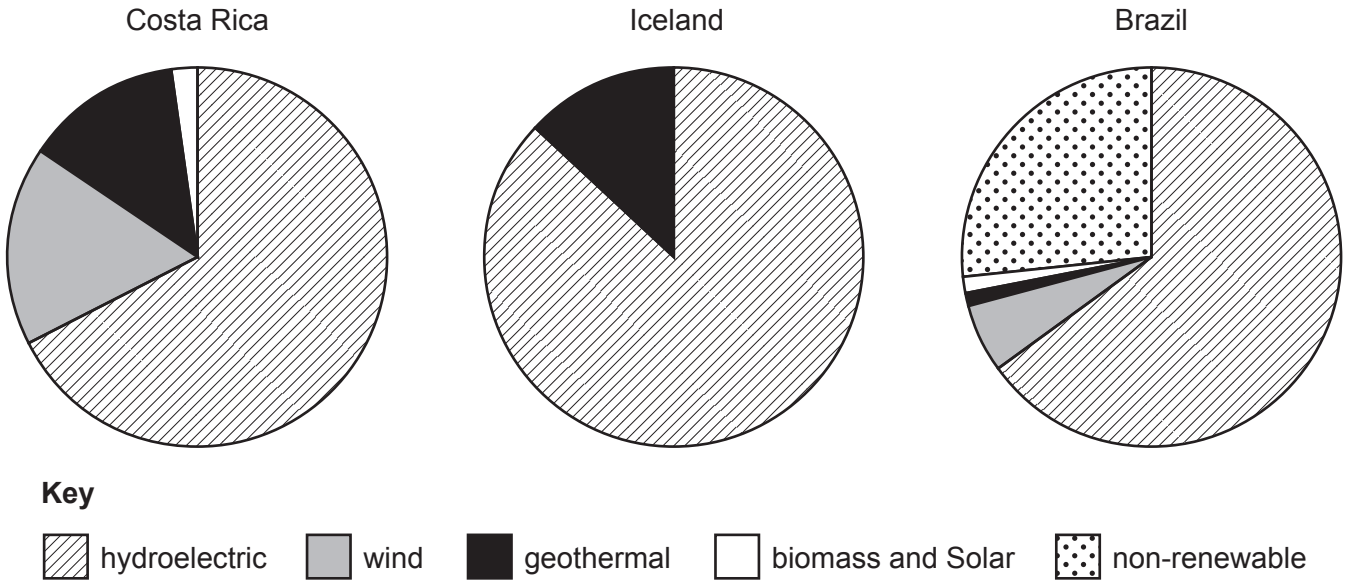


Fig. 3.1

- (a) State the largest source of renewable energy used by the three countries shown in Fig. 3.1.
..... [1]
- (b) State **one** other source of renewable energy other than those shown in Fig. 3.1.
..... [1]
- (c) Climate change can result in drought.
Explain how droughts can lead to energy insecurity in Brazil.
.....
.....
.....
..... [2]
- (d) Suggest why Costa Rica might be described as being more energy secure than Iceland.
.....
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..... [2]

[Total: 6]

4 (a) Photochemical smog is linked to the combustion of fossil fuels.

(i) Describe **one** example of the combustion of fossil fuels.

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..... [1]

(ii) Define photochemical smog.

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..... [2]

(iii) State **one** impact of photochemical smog on humans.

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..... [1]

- (b) Fig. 4.1 is a map showing the Ultra-Low Emission Zone for London, UK. An Ultra-Low Emission Zone is an area which restricts vehicle access in order to improve air quality.

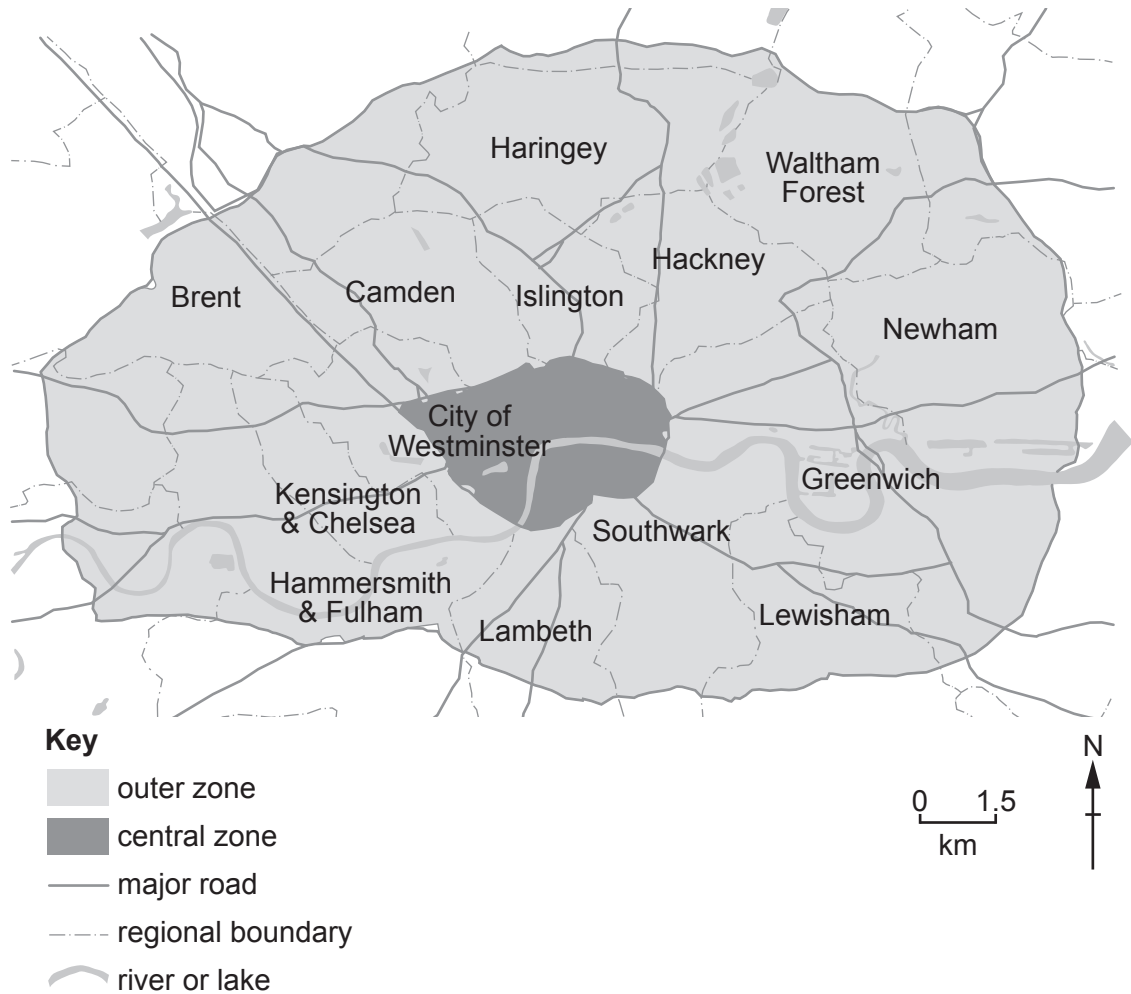


Fig. 4.1

Suggest how an Ultra-Low Emission Zone works as a strategy to manage air pollution.

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..... [4]

- 5 Fig. 5.1 shows the reduction of water in the Puzhal reservoir in the Chennai area, India.

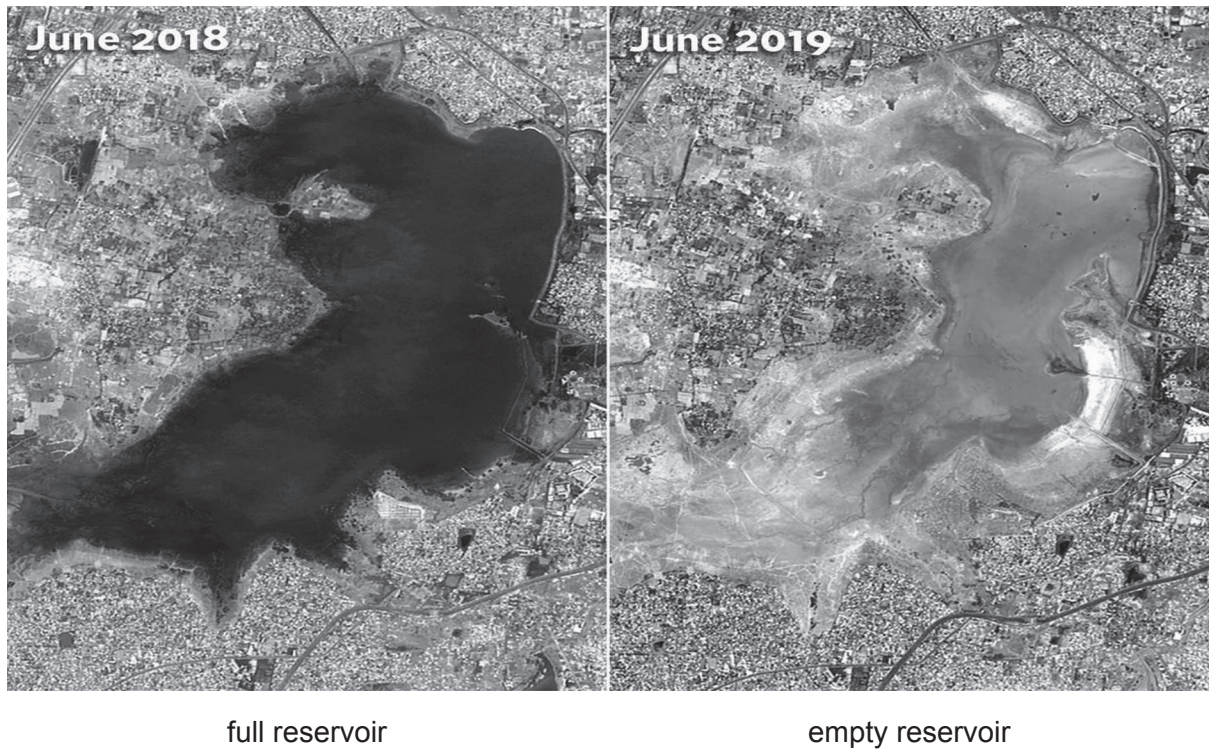


Fig. 5.1

- (a) Suggest reasons for the reduction of water in the Puzhal reservoir shown in Fig. 5.1.

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..... [4]

(b) Define the term water security.

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(c) Describe **two** impacts of the loss of water security in the Chennai area, India.

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2

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..... [4]

(d) Describe **two** strategies to manage the water security in the Chennai area, India.

1

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..... [4]

[Total: 14]

6 Fig. 6.1 shows the structure of the atmosphere.

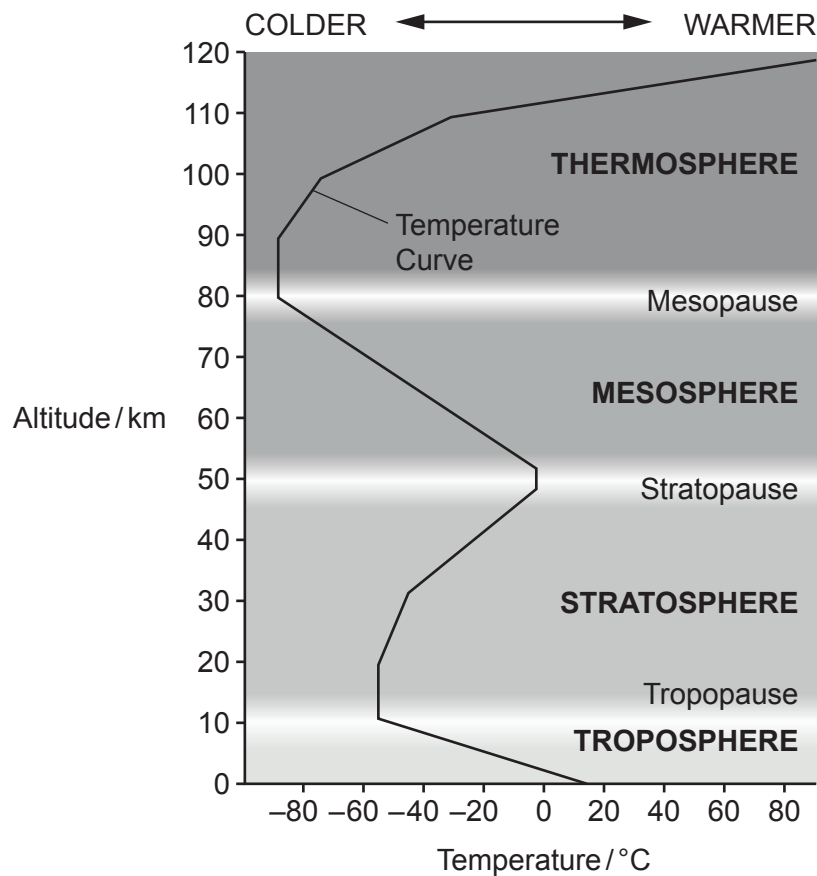


Fig. 6.1

(a) Using Fig. 6.1, state the range of altitudes that contain the ozone layer.

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 [1]

(b) Outline the role of the ozone layer.

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 [2]

(c) Define the term ozone hole.

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 [2]

(d) State **two** effects of ozone depletion on humans.

1

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2

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[2]

[Total: 7]

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