



CANDIDATE
NAME

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CENTRE
NUMBER

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CANDIDATE
NUMBER

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8291/13

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) Table 1.1 shows the population density for three countries.

Table 1.1

country	area / km ²	population in 2020	population density / people km ⁻²
United Kingdom	241 930	67 200 000	278
France	547 557	67 400 000	123
Bangladesh	130 170	164 700 000	

- (i) Complete Table 1.1 by calculating the population density for Bangladesh. Give your answer to the nearest whole number.

[2]

- (ii) Use Table 1.1 to suggest why the United Kingdom and France have different population densities.

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..... [1]

- (iii) Describe **four** factors which influence the population density of different regions within a country.

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..... [4]

(b) Fig. 1.1 shows population pyramids for the United Kingdom (a HIC) and Mozambique (a LIC).

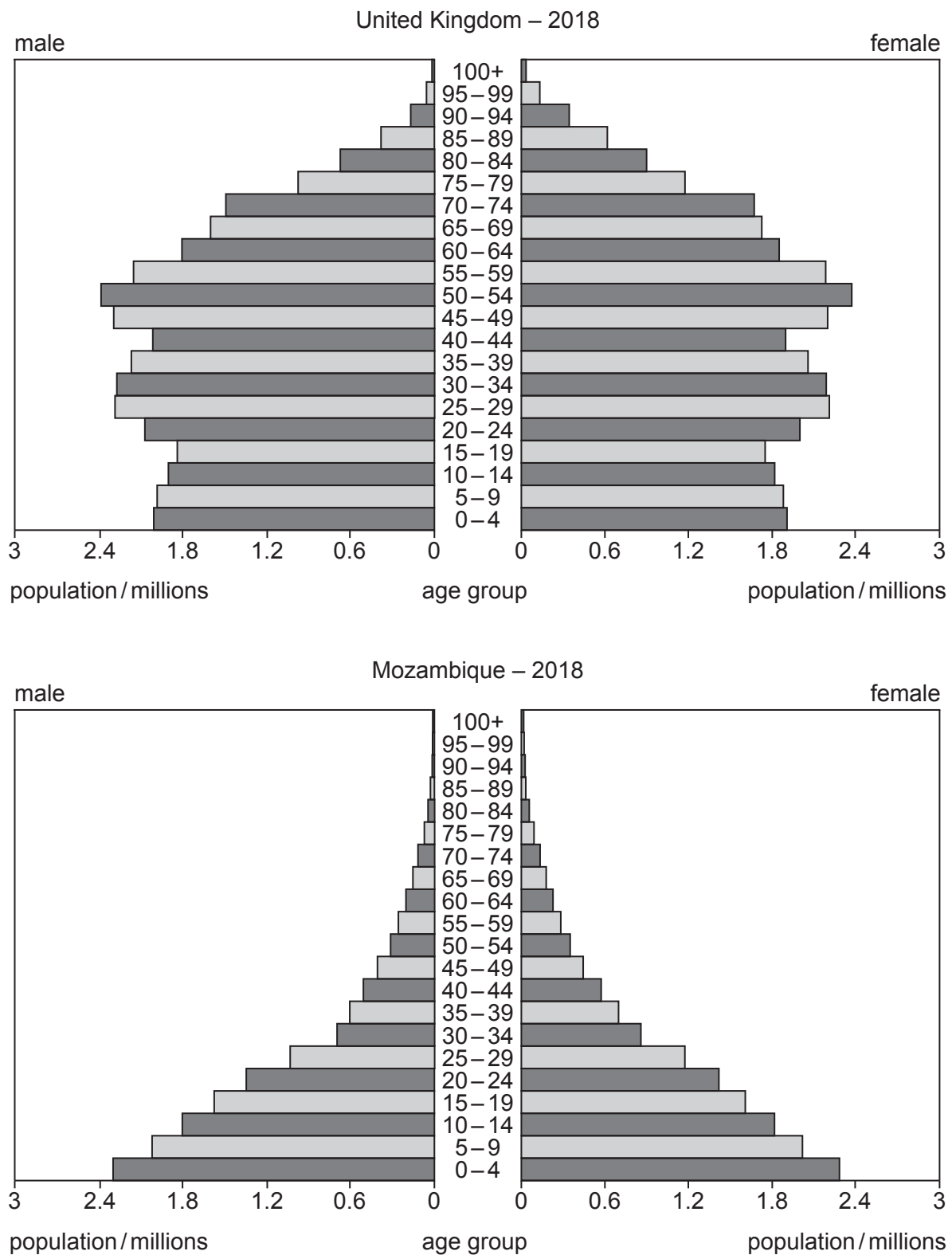


Fig. 1.1

- (i) Using Fig. 1.1, compare the population pyramids of the United Kingdom and Mozambique.

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..... [4]

- (ii) Suggest reasons for the differences in the population pyramids for the HIC and the LIC shown in Fig. 1.1.

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..... [4]

[Total: 15]

- 2 (a) Table 2.1 shows four gases that cause air pollution and one source.

Table 2.1

gas	source
carbon dioxide CO ₂	combustion of fossil fuels
methane CH ₄	
oxides of nitrogen NO _x	
CFCs	

- (i) Complete Table 2.1 to show **one** source for each gas. [2]

- (ii) Describe strategies for managing air pollution caused by the gases shown in Table 2.1.

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..... [4]

(iii) Explain how the combustion of fossil fuels leads to the enhanced greenhouse effect.

[5]

(b) Fig. 2.1 shows the carbon cycle.

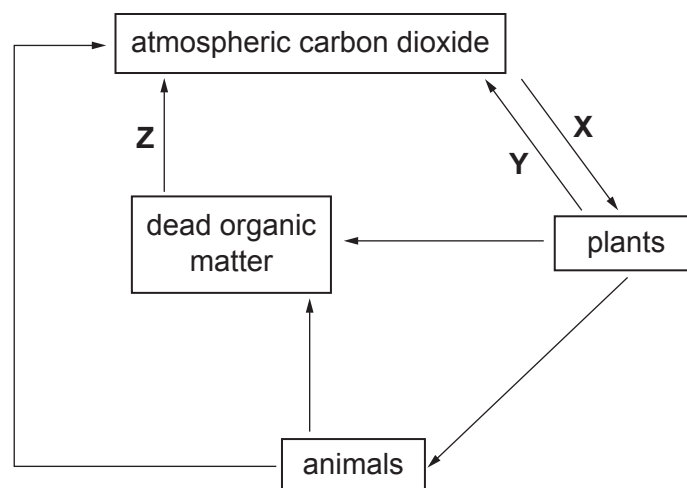


Fig. 2.1

State the processes labelled **X**, **Y** and **Z** in Fig. 2.1.

X

Y

Z

[2]

[Total: 13]

3 (a) Tundra and desert are two biomes that receive very little precipitation.

(i) State **one** abiotic component, other than water.

..... [1]

(ii) Explain, in terms of abiotic components, why mosses and lichens are the most abundant vegetation in tundra.

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..... [4]

(iii) Name the store of methane and carbon dioxide found in tundra.

..... [1]

(b) Fig. 3.1 shows some nutrient transfers and stores for a desert biome.

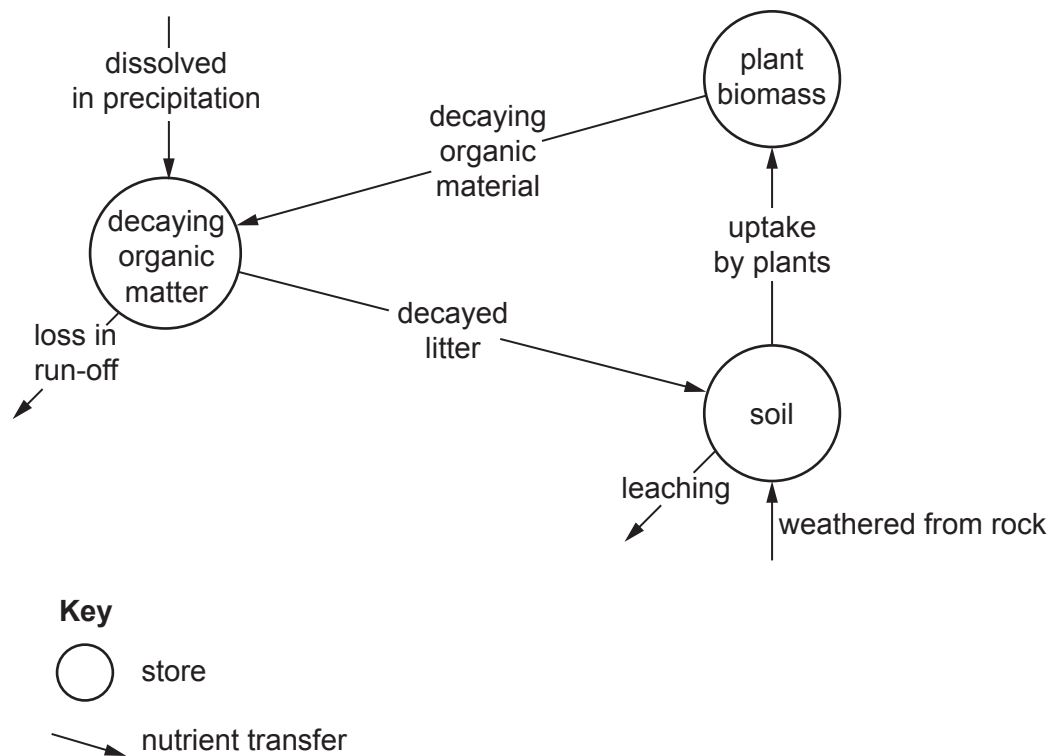


Fig. 3.1

(i) Explain why the stores for biomass and litter are relatively small in a desert biome.

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..... [4]

(ii) Define the terms gross primary productivity and net primary productivity.

gross primary productivity

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net primary productivity

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[2]

- 4 (a) Fig. 4.1 shows the current and proposed hydroelectric power production in Austria, a country in Europe.

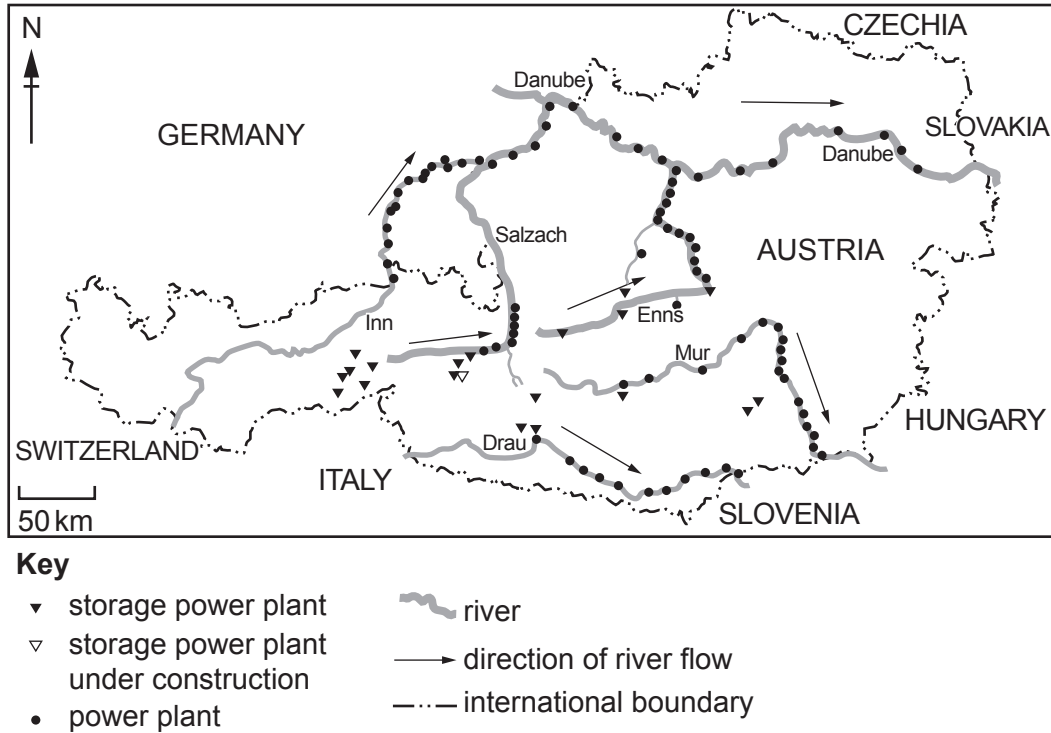


Fig. 4.1

- (i) Describe how the development of hydroelectric power in Austria contributes to energy security.

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(ii) Explain **two** causes of energy insecurity.

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(b) State **two** advantages and **two** disadvantages, other than energy security, of hydroelectric power generation to the countries shown in Fig. 4.1.

advantages

1

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2

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disadvantages

1

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2

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[4]

[Total: 12]

- 5 A recent survey found that the amount of plastic waste on beaches in the United Kingdom was the same whether or not the beach was in a marine conservation area.

(a) Give **three** reasons why the marine conservation area beaches have the same amount of plastic waste as other beaches.

1

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2

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3

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[3]

(b) Suggest **one** impact of plastic waste on beach environments.

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..... [1]

(c) Evaluate the success of **one** strategy to manage the disposal of plastic waste. Give reasons for your answer.

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..... [4]

[Total: 8]

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