Cambridge Assessment International Education

Cambridge O Level

CANDIDATE NAME	

CENTRE NUMBER						CANDIDATE NUMBER				

5976342828

ENVIRONMENTAL MANAGEMENT **5014/12**

Paper 1 Theory **May/June 2024**

1 hour 45 minutes

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- 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.

INFORMATION

- 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.

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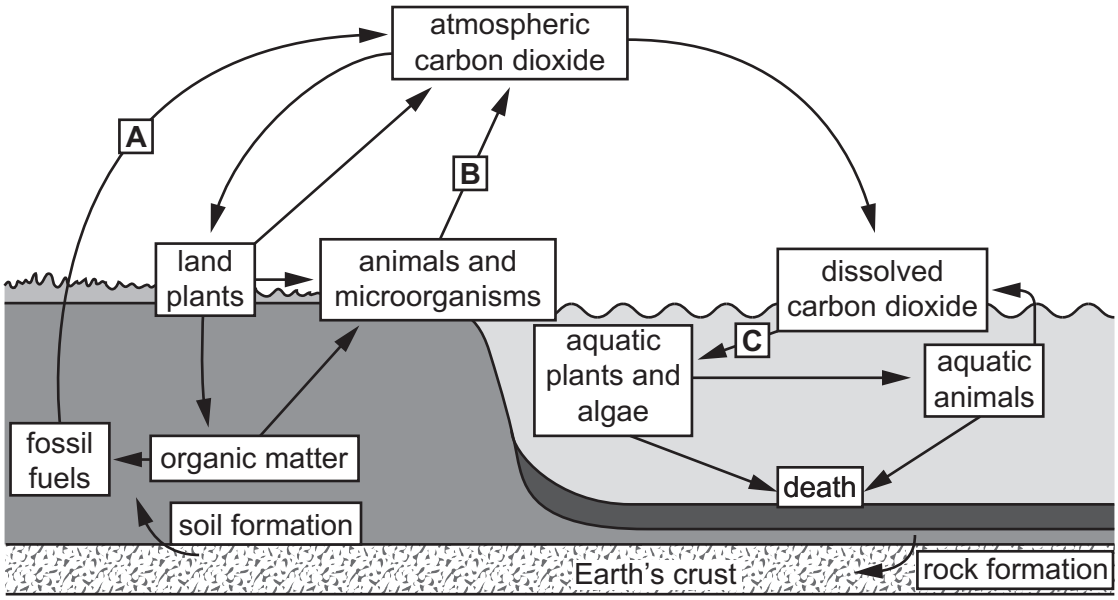
Section A

1 The diagram shows part of the carbon cycle.



(a) State the processes at **A**, **B** and **C**.

A .....

B .....

C .....

[3]

(b) Explain why aquatic plants and algae are essential to aquatic animals.

.....

.....

.....

..... [2]

[Total: 5]

2 **(a)** The table shows the year that reserves of fossil fuels are predicted to be used up.

fossil fuel	year the reserve will be used up
oil	2052
coal	2090
natural gas	2060

(i) Calculate the number of years the reserves of coal are predicted to last.

..... years [1]

(ii) State **two** reasons why the reserves of fossil fuels might be used up before the predicted year.

1 .....

.....

2 .....

.....
[2]

(b) Describe the formation of coal.

.....

.....

.....

.....

.....

..... [3]

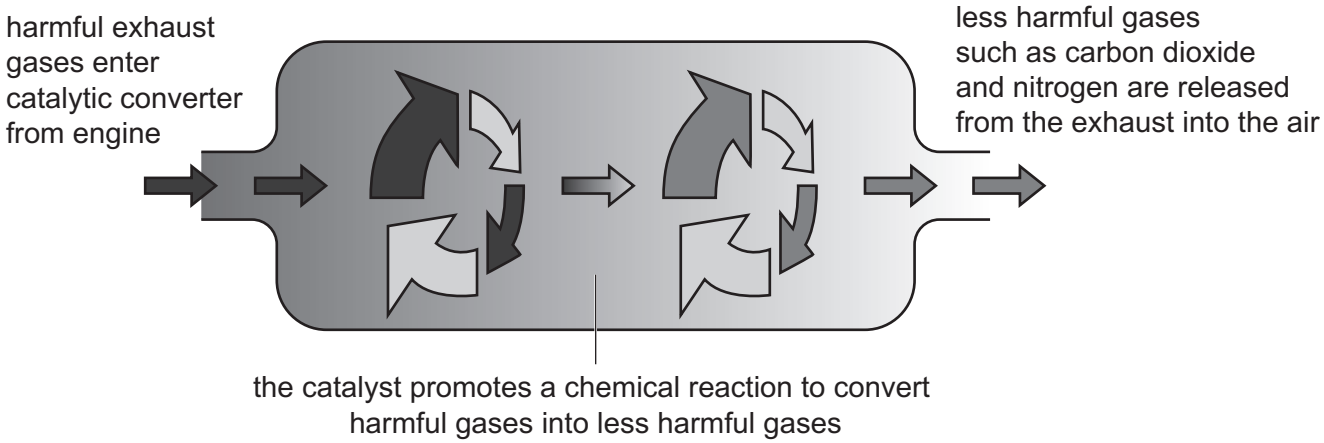
(c) State **two** renewable energy resources.

1 .....

2 .....
[1]

[Total: 7]

3 The diagram shows a catalytic converter used in vehicles.



(a) State **two** harmful gases converted by the catalytic converter.

1 .....

2 .....
[2]

(b) State **three** reasons why catalytic converters will **not** solve the problem of atmospheric pollution.

1 .....

.....

2 .....

.....

3 .....

.....
[3]

(c) State **three** strategies for reducing atmospheric pollution from vehicles other than catalytic converters.

1 .....

.....

2 .....

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3 .....

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[3]

[Total: 8]

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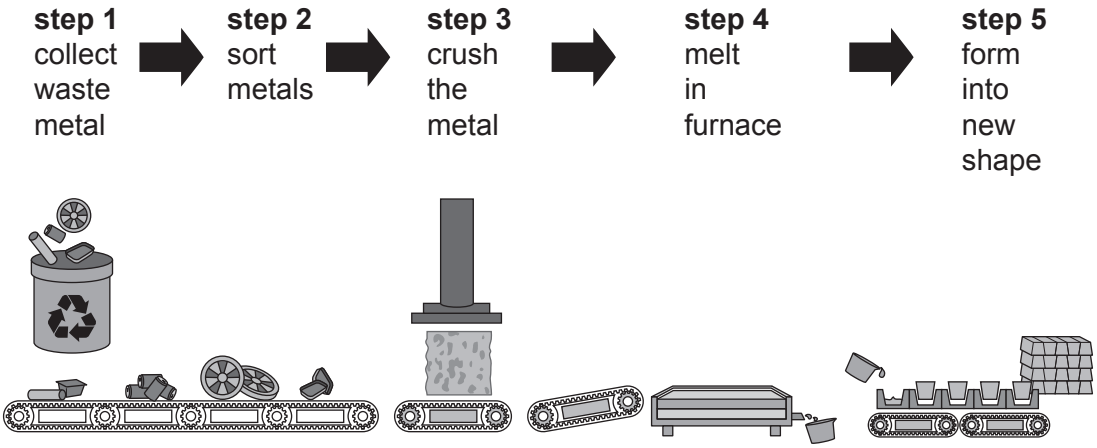
Section B

4 The diagram shows a process for recycling metals.



(a) Explain the importance of step 2 in the recycling process.

.....

..... [1]

(b) New metal is extracted from mined rock.
The picture shows a type of mine.

(i) State the type of mining shown in the picture.

..... [1]

(ii) Suggest reasons why recycling metals is less harmful for the environment than mining for new metals.

.....

.....

.....

..... [2]

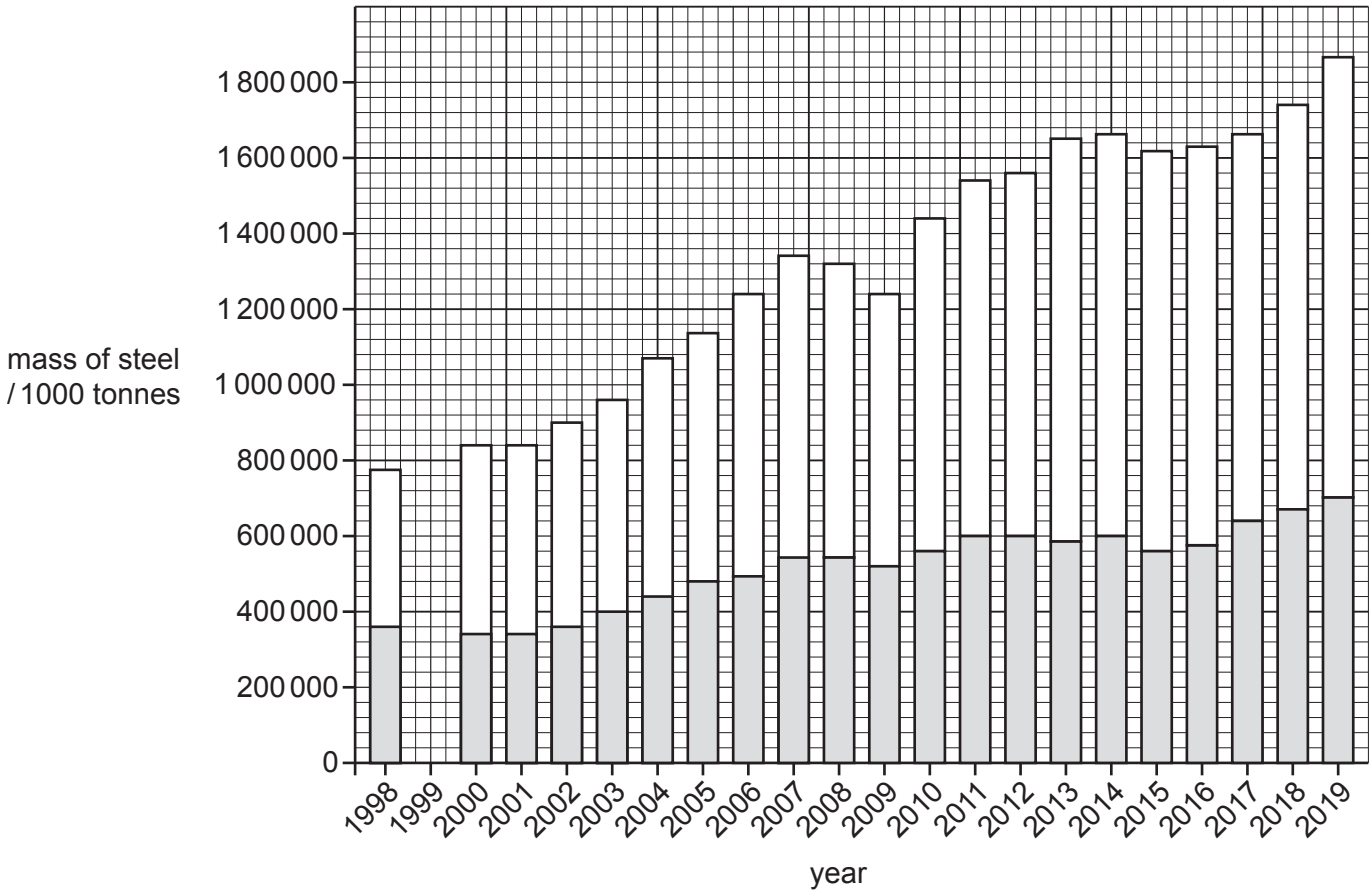
(c) The graph shows the total mass of steel produced from 1998 to 2019.

The total mass of steel contains recycled steel and new steel.

Key

☐ new steel

▒ recycled steel



(i) Use the data in the table to complete the graph.

year	1999
mass of recycled steel / 1000 tonnes	340 000
mass of total steel production / 1000 tonnes	800 000

[2]

(ii) Describe the trend in the production of recycled steel between 2000 and 2019.

.....

.....

.....

..... [2]

(iii) Calculate the percentage of steel production from recycled steel in 1999.

Give your answer to one decimal place.

.....% [1]

(d) Suggest **three** strategies to increase the recycling of metals.

1 .....

.....

2 .....

.....

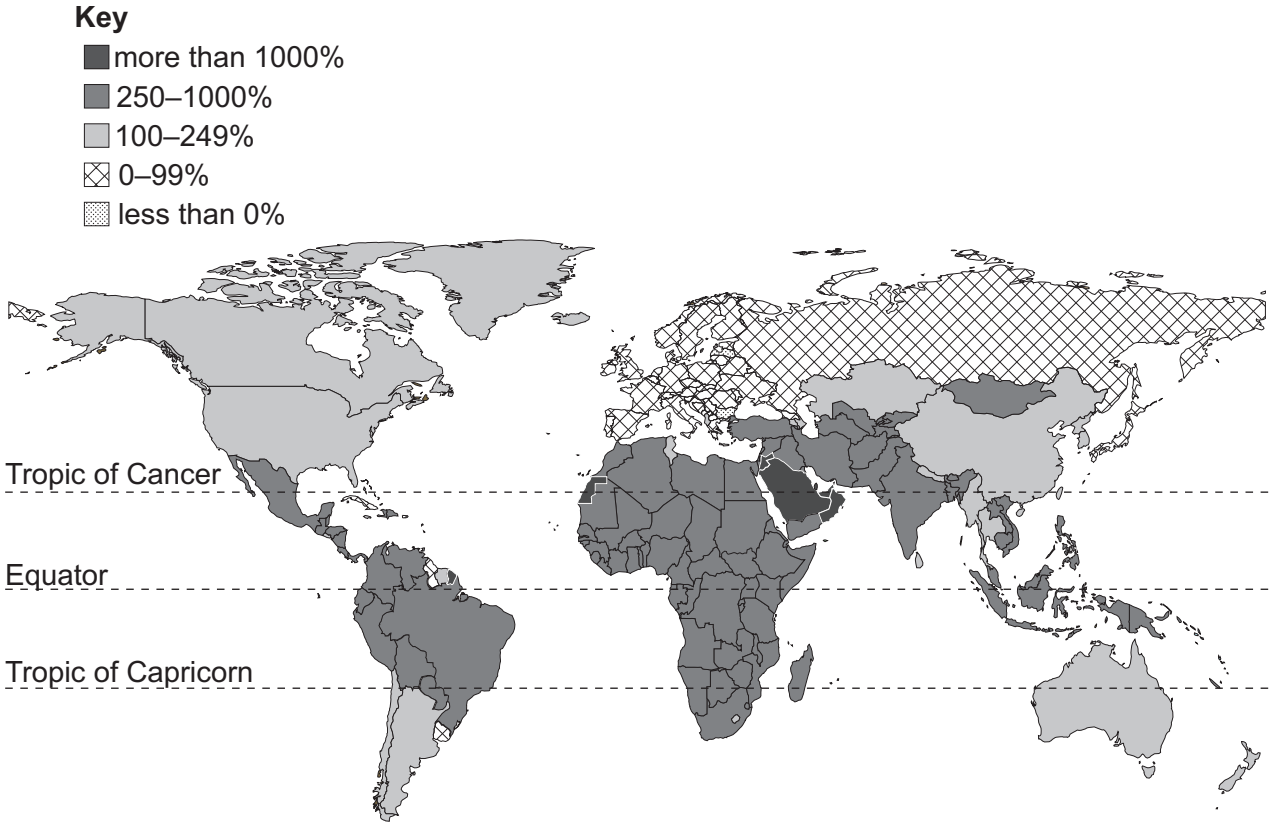
3 .....

.....

[3]

[Total: 12]

5 The map shows the percentage increase in population by country between 1950 and 2021.



(a) Describe the distribution of population growth between 1950 and 2021.

.....

.....

.....

.....

.....

.....

.....

..... [4]

(b) Suggest the impacts on natural resources for countries with an increase in population of more than 1000%.

Give reasons for your answer.

.....

.....

.....

.....

.....

..... [3]

(c) A country with a low population growth introduces a pronatalist strategy to encourage families to have more children.

(i) State **one** example of a pronatalist strategy.

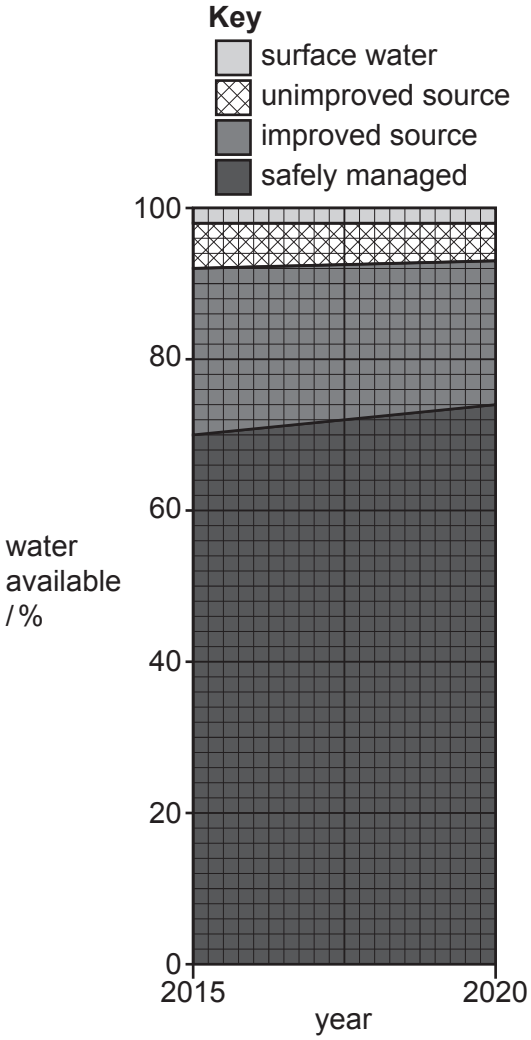
..... [1]

(ii) Suggest **one** negative impact of this strategy on the economy of a country.

..... [1]

[Total: 9]

6 The graph shows the global availability of drinking water supplies in 2015–2020.



(a) State the percentage of the world population who had access to safely managed water in 2020.

.....% [1]

(b) Suggest **three** reasons why some people do **not** have access to safely managed water.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(c) Cholera is an infectious disease that can enter drinking water.

(i) State **two** strategies to treat drinking water which is contaminated with cholera.

1 .....

2 .....
[2]

(ii) Describe how cholera enters drinking water.

.....

.....

.....

.....

.....

..... [3]

(d) Suggest **two** reasons why some fresh water sources are **not** used for drinking water, other than contamination.

1 .....

.....

2 .....

.....
[2]

[Total: 11]

7 In 2011, a tsunami occurred 130 km from the coast of Japan.

The tsunami killed 18 000 people and damaged many buildings including the Fukushima nuclear power station.

(a) Describe how a tsunami occurs.

.....

.....

.....

.....

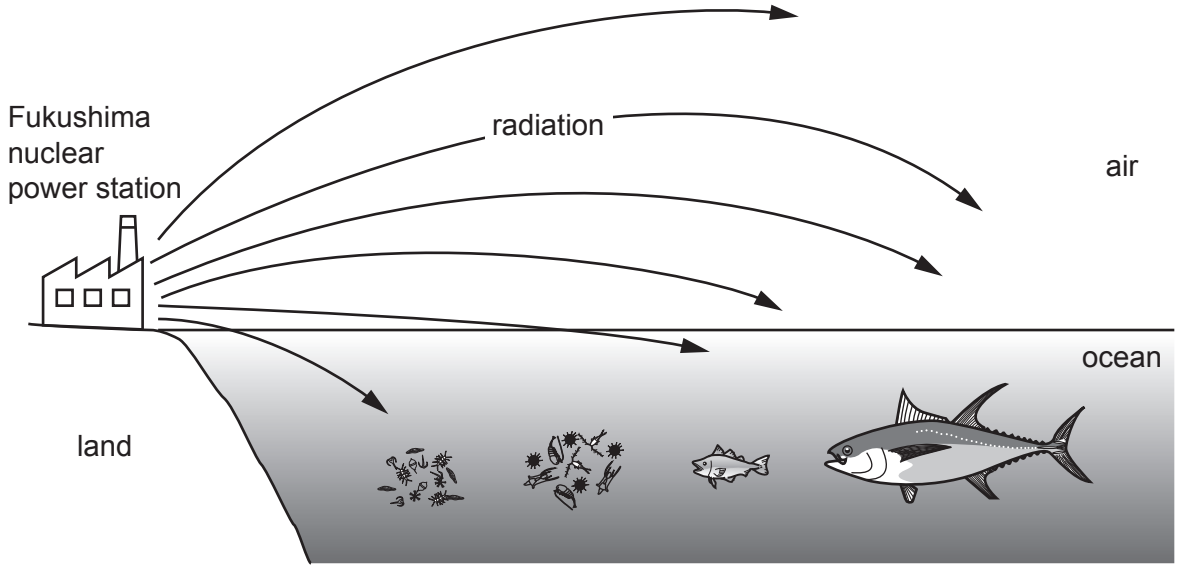
.....

..... [3]

(b) The damage to the Fukushima nuclear power station caused a leak of radiation. Radiation is harmful to all organisms.

Scientists are still monitoring marine organisms to check their radiation levels.

The diagram shows Fukushima nuclear power station.



Explain why large fish have the greatest radiation levels.

Use the diagram to support your answer.

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..... [5]

(c) Suggest reasons why countries build nuclear power stations to generate electricity.

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..... [3]

[Total: 11]

8 A newspaper article said:

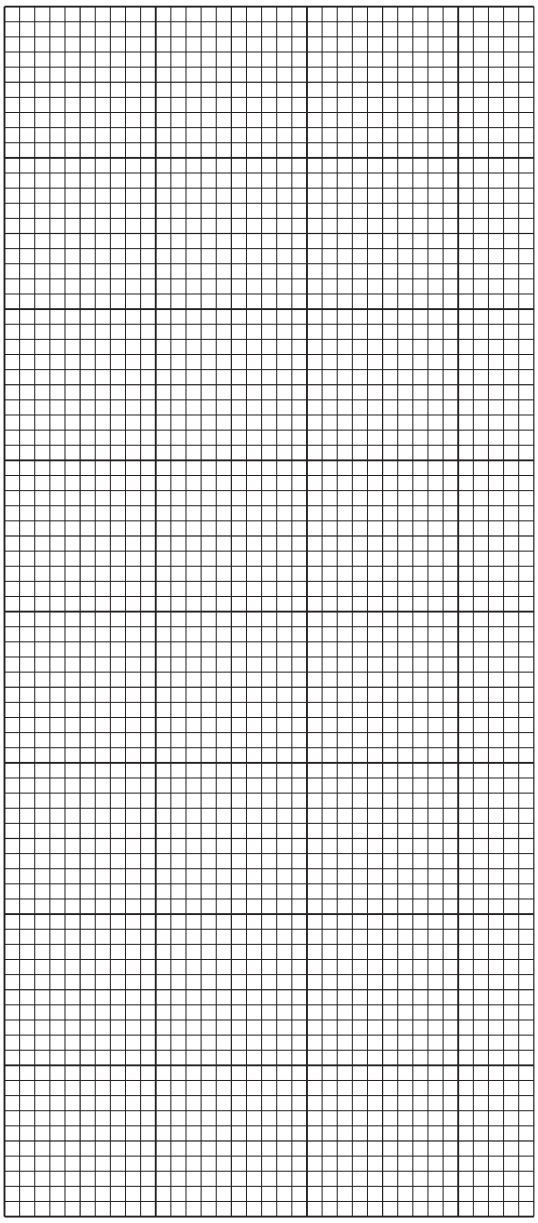
> **Tree species threatened with extinction**
>
> Scientific research reports that 30% of the world's tree species are threatened with extinction in the wild.
>
> 17 500 tree species are threatened with extinction.
>
> The threats include:
>
> - forest clearance for crops (affecting 29% of species)
> - logging (27%)
> - clearance for livestock grazing or farming (14%)
> - clearance for development (13%)
> - fire (13%)
> - other (4%).
>
> Scientists demand that action is taken to prevent the extinction of these species.

(a) **(i)** Calculate the number of tree species in the world.

number of tree species = ... [1]

(ii) Draw a bar chart to show the threats to tree species.

Use the information in the article.



[4]

(iii) 4% of tree species are threatened with extinction for other reasons.

Suggest **two** of these other threats.

1 .....

.....

2 .....

.....

[2]

(b) Extractive reserves and seed banks are two ways to reduce the threat of extinction of these tree species.

Explain how these methods reduce the threat of extinction.

extractive reserves .....

.....

.....

.....

seed banks .....

.....

.....

.....

[4]

(c) A student says:

> Commercial forests often grow only one species of tree.
> Growing only one species of tree is bad for wildlife.
> This type of forest should be banned.

To what extent do you agree with this statement?

Give reasons for your answer.

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..... [6]

[Total: 17]

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