Cambridge
O Level

Cambridge International Examinations
Cambridge Ordinary Level

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

3553619126

ENVIRONMENTAL MANAGEMENT **5014/12**

Paper 1 **October/November 2017**

2 hours 15 minutes

Candidates answer on the Question Paper.

No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

Write your answers in the spaces provided on the Question Paper.
All questions in Section A carry 10 marks.
Both questions in Section B carry 40 marks.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

This document consists of **24** printed pages.

CAMBRIDGE International Examinations

Section A

Answer **all** the questions.

1 **(a)** The photograph shows an area where copper ore is mined. The information in the box is about copper extraction processes.

> As the ore contains less than 3% copper, some waste rock is removed from it in a crusher nearby. The copper ore is crushed to a fine powder and mixed with water. The copper particles float to the surface and are removed and dried before being taken to the smelter.

(i) Explain how this method of mineral extraction has changed the appearance of the mine in the photograph over time.

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.....[2]

(ii) Describe how the vehicle shown in the photograph is used in this method of mineral extraction.

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.....[1]

(b) Suggest why the mining company spends money on:

landscaping

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water treatment

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new technology to reduce energy use.

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[3]

(c) Give reasons why mines may close.

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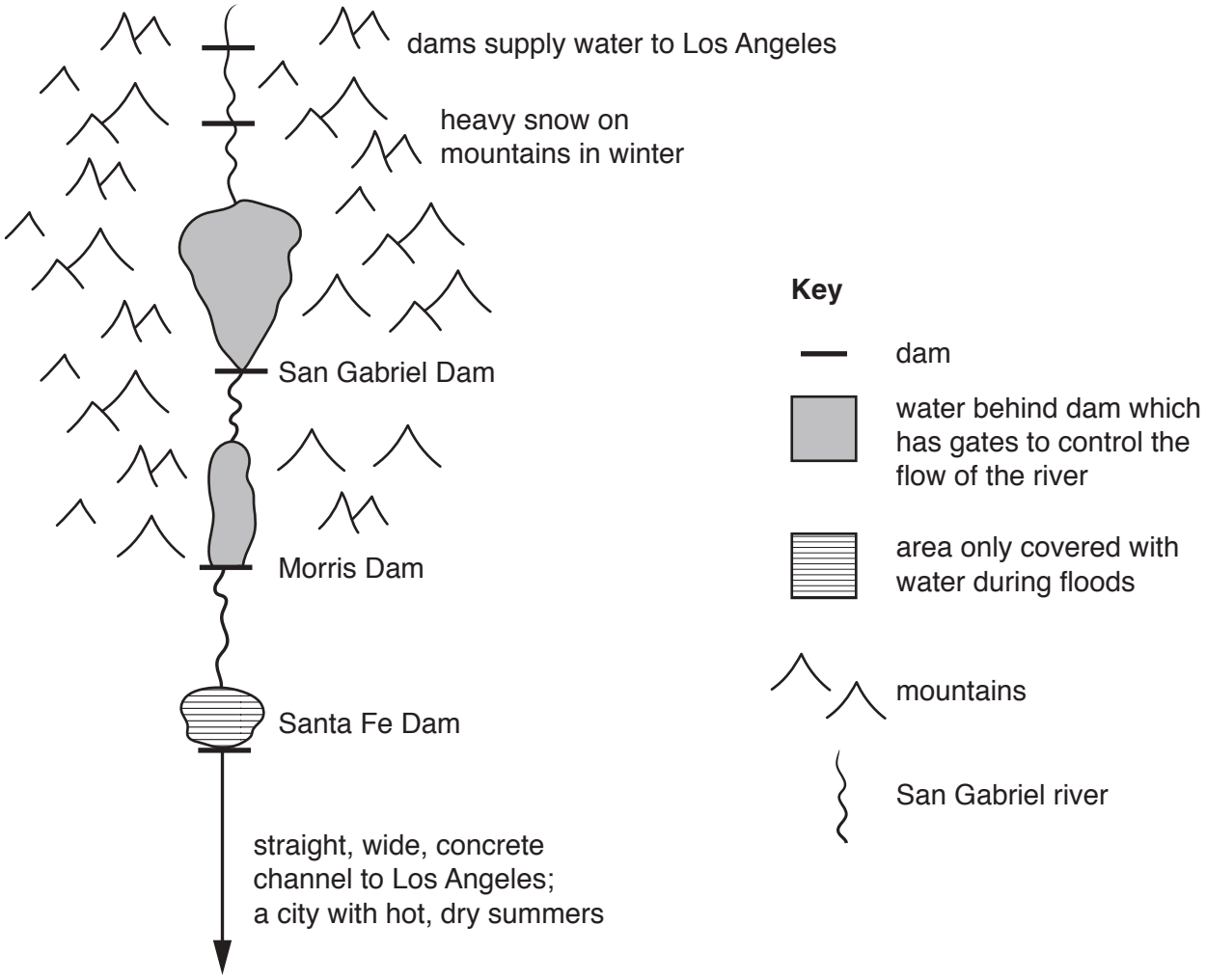
2 **(a)** The diagram shows part of the San Gabriel River in the United States of America.



(not to scale)

(i) Explain why the Santa Fe Dam will hold water behind it in spring.

.....[1]

(ii) State **two** reasons why dams were built on the San Gabriel River.

1 .....

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2 .....

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[2]

(iii) Explain why this area is an example of the mismatch between water supply and demand.

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.....[1]

(iv) Name **two** water cycle processes that will occur during spring in the area behind the Santa Fe Dam.

1 .....

2 .....[2]

(b) Explain how rivers may change as they flow through large cities.

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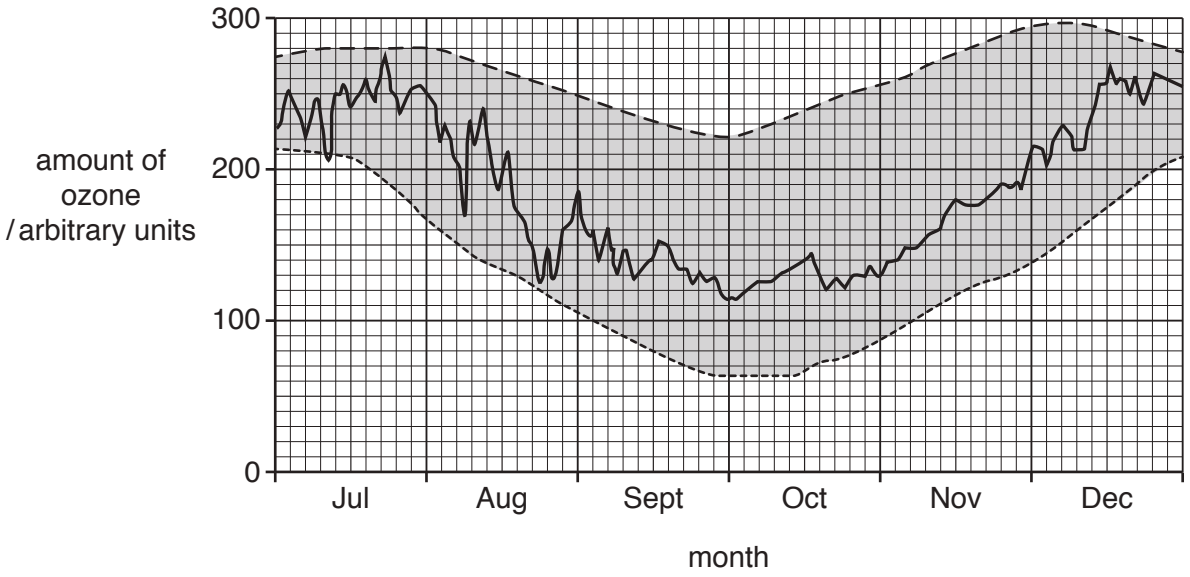
3 The graph shows the amounts of ozone in the atmosphere above Antarctica.



Key

amount of ozone in 2014

– – – highest amount of ozone recorded from 1979 to 2013

------- lowest amount of ozone recorded from 1979 to 2013

(a) (i) State the date with the lowest amount of ozone in 2014.

.....[1]

(ii) Some scientists suggest that attempts to reduce the destruction of ozone have had little success.

Explain how the graph supports this.

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.....[2]

(b) Describe strategies to reduce the hole in the ozone layer.

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.....[4]

(c) Suggest why international action was necessary to protect the ozone layer.

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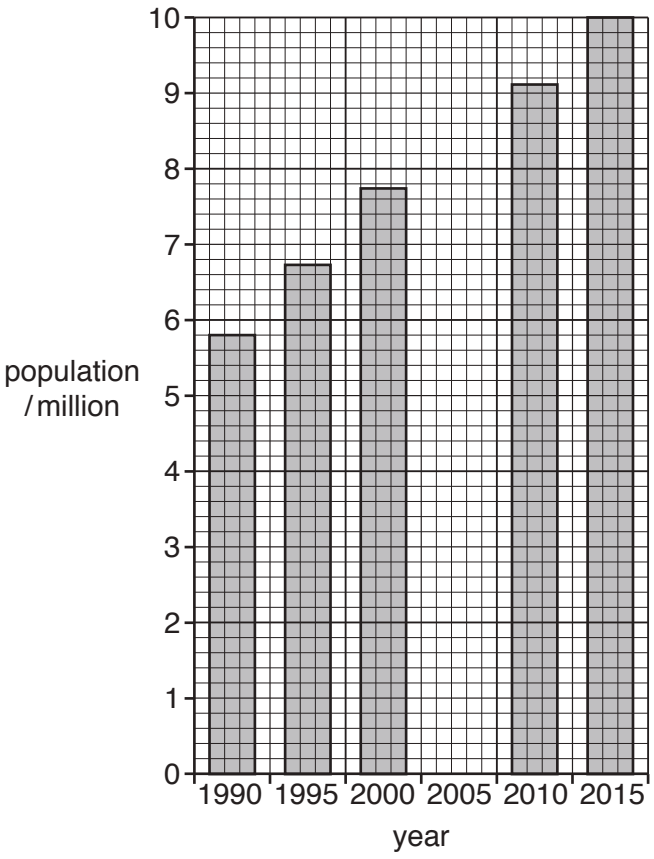
[Turn over

4 **(a)** The graph shows changes in the population of Lima, the capital city of Peru, between 1990 and 2015.



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

year	2005
population	8 500 000

[1]

(ii) Calculate the growth in Lima's population between 1990 and 2015.

Space for working.

.....[1]

(iii) The population of Peru in 2015 was nearly 31 million.

Circle the approximate percentage of Peru's population that lived in Lima in 2015.

10% 20% 30% 40% [1]

(b) (i) Explain why many rural areas in developing countries have high levels of poverty.

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(ii) Suggest how people could be encouraged to remain in rural areas instead of moving to cities.

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.....[4]

Section B

Answer **both** questions.

5 **(a)** The table shows the percentage of the Earth's land surface covered by some biomes.

biome name	percentage of Earth's land surface
desert	19
tundra	11
taiga	17
temperate forest	8
savanna	10
tropical rainforest	13

(i) State the biome which covers the largest area of the Earth's land surface.

.....[1]

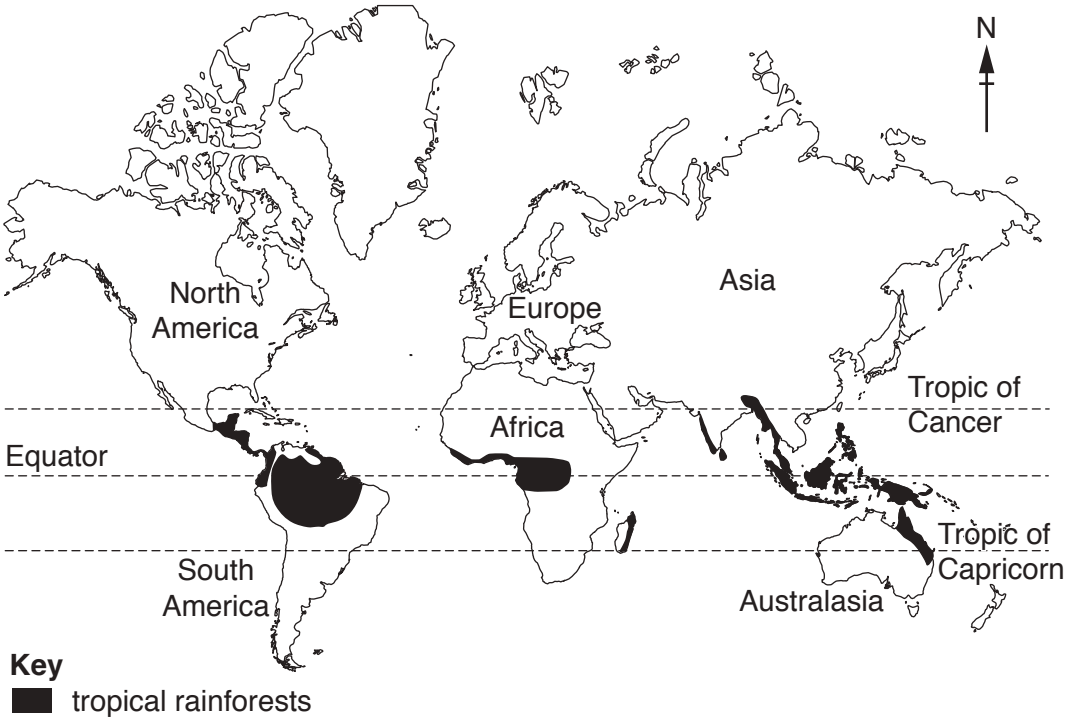
(ii) Calculate how much more of the Earth's land surface is covered by the taiga biome than the tundra biome.

.....% [1]

(iii) Calculate the total percentage of the Earth's land surface covered by the taiga, temperate forest and tropical rainforest combined.

.....% [1]

The map shows the distribution of tropical rainforest.



(b) Describe the distribution of tropical rainforest as shown on the map.

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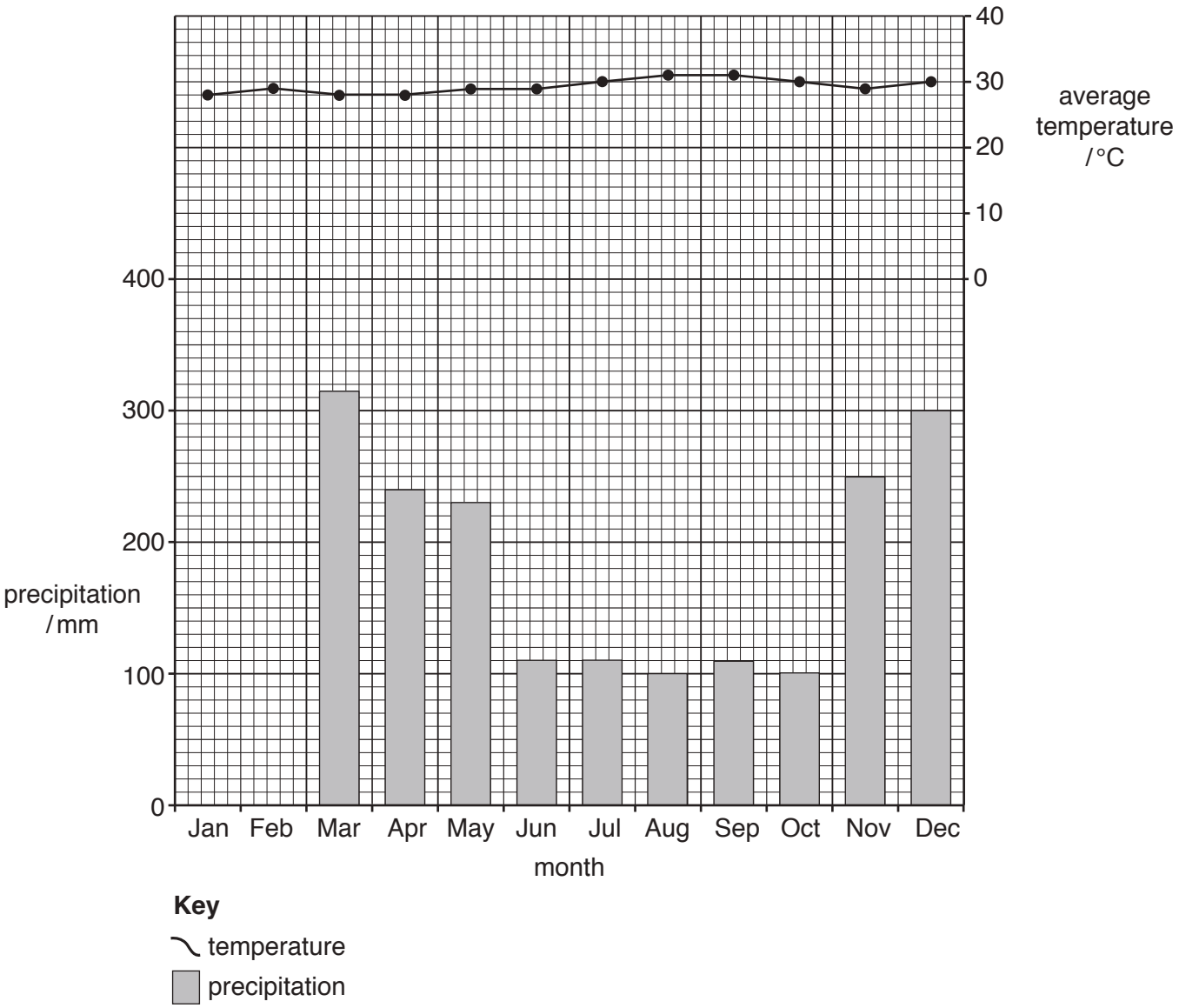
.....[3]

(c) The graph and table show climate information for a weather station in Brazil which has an equatorial climate.

(i) Using the information in the table, complete the rainfall graph for January and February. [2]

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
average temperature /°C	28	29	28	28	29	29	30	31	31	30	29	30
precipitation /mm	380	310	315	240	230	110	110	100	110	100	250	300



(ii) Using the climate graph and the information in the table, describe the pattern of rainfall throughout the year.

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.....[2]

(iii) State a month with the highest average temperature.

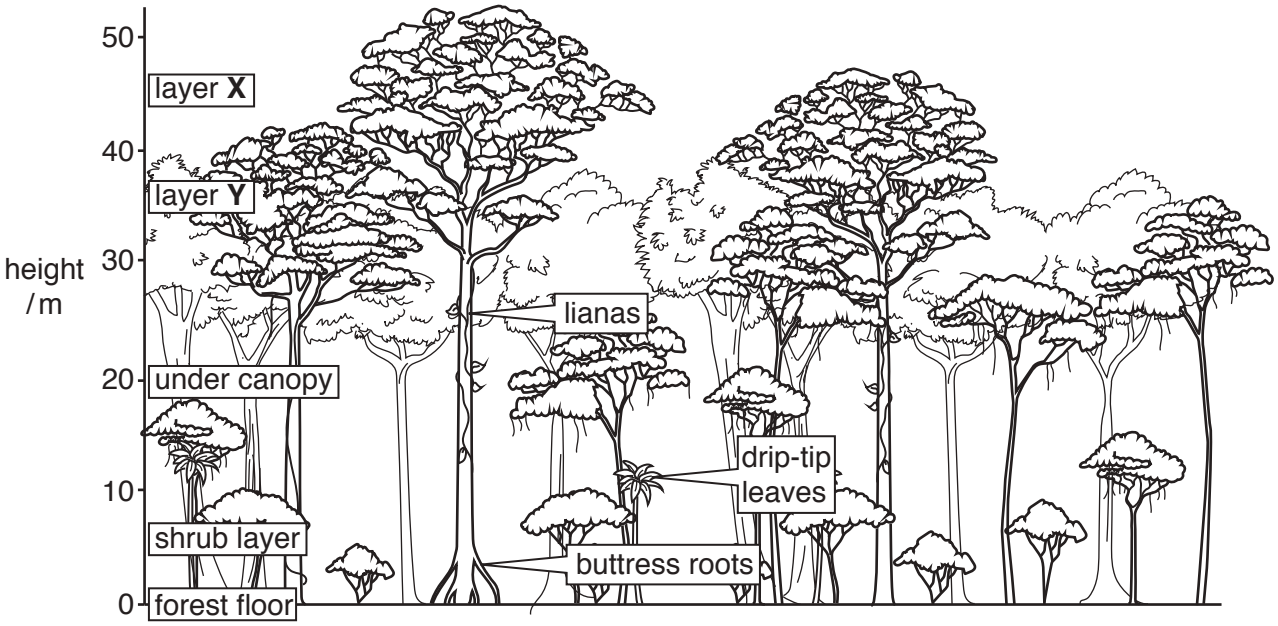
.....[1]

(iv) Calculate the annual average temperature range.

.....°C [1]

[Turn over

(d) The diagram shows the layers of the tropical rainforest vegetation.



(i) State the name of the layer at:

X .....

Y .....

[2]

(ii) Estimate the height of the tallest tree shown in the diagram.

.....m [1]

(iii) Explain why rainforest trees have:

buttress roots

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drip-tip leaves.

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[4]

(e) Many areas of tropical rainforest are being cleared.

State **three** causes of deforestation in tropical rainforests.

1 .....

2 .....

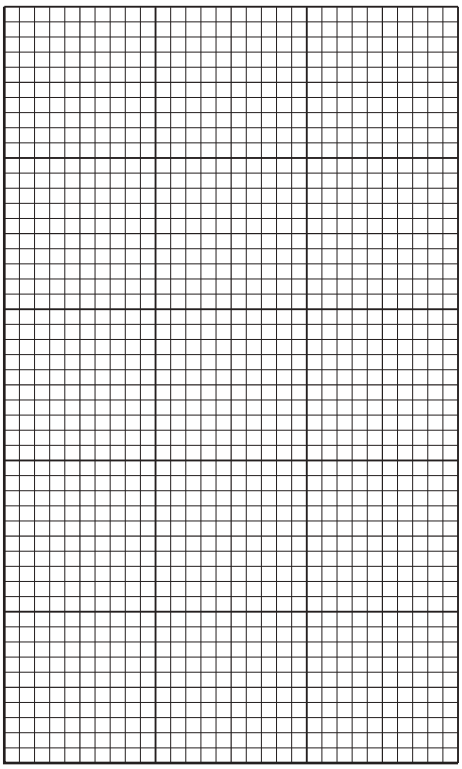
3 .....

[3]

(f) The table shows information about rainforests in Borneo.

year	percentage of land covered by rainforest
2010	44
2020 (predicted)	33

(i) Draw a bar graph to show this information.



[3]

(ii) Calculate the predicted decrease in the percentage of land covered by rainforest in Borneo between 2010 and 2020.

.....[1]

(iii) Suggest the impacts on local people of deforestation of the tropical rainforest.

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(g) Sustainable harvesting of hardwood trees can be a solution to tropical rainforest destruction. Do you agree or disagree with this statement? Give reasons for your answer.

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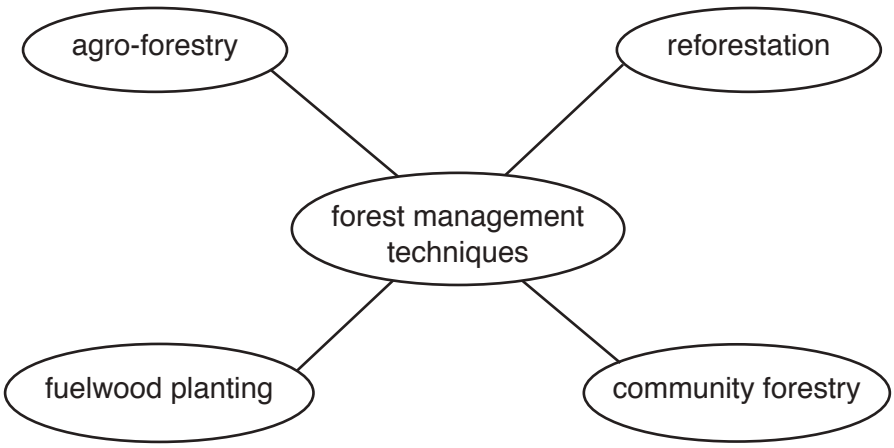
(h) The diagram shows forest management techniques.

Choose **two** and suggest how they could improve the sustainable management of forests.



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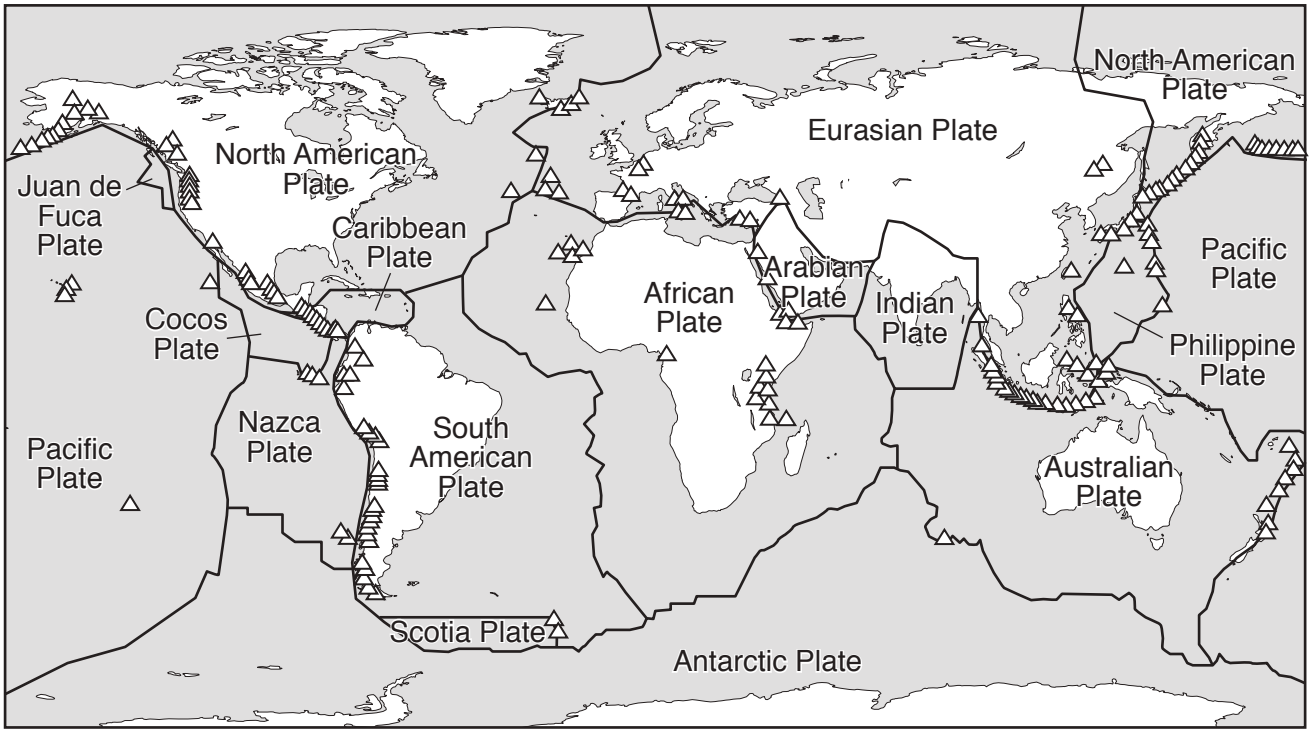
6 **(a)** Read the passage. Write the correct word in the spaces from the list to complete the passage.

core **crust** **plates**

The outer layer of the Earth is called the ..... . This layer is divided into large sections called ..... . Below this layer is the mantle which is made up of semi-molten rocks. The central part of the Earth is divided into the inner and outer ..... .

[2]

(b) The map shows the global distribution of volcanoes.



Key

plate boundary

volcano

Describe the distribution of volcanoes as shown on the map.

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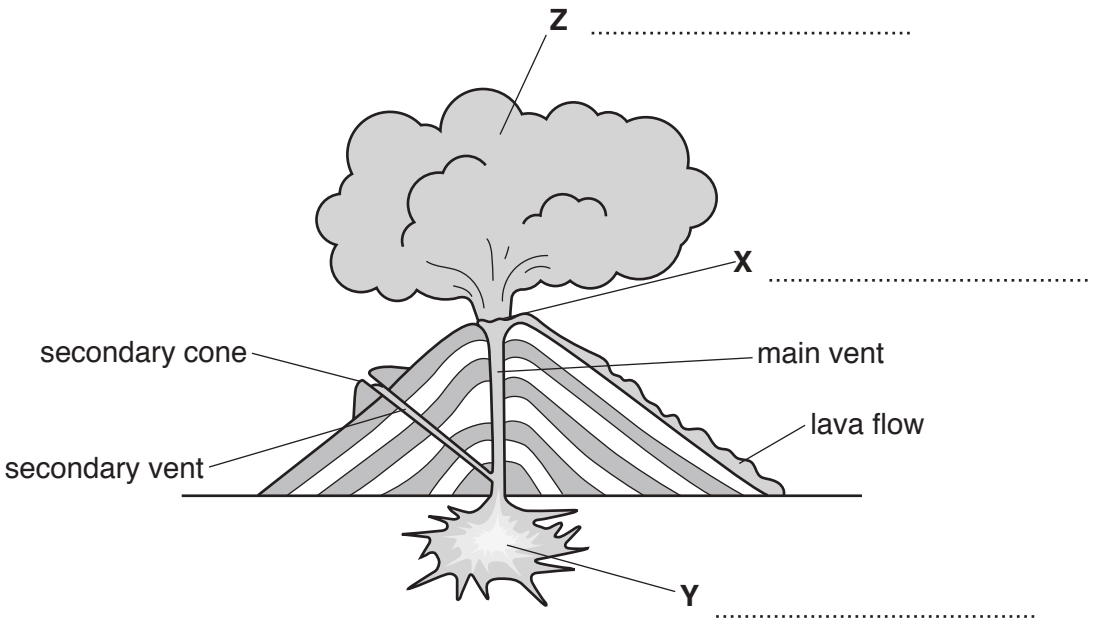
.....[3]

(c) The diagram shows features of a type of volcano.

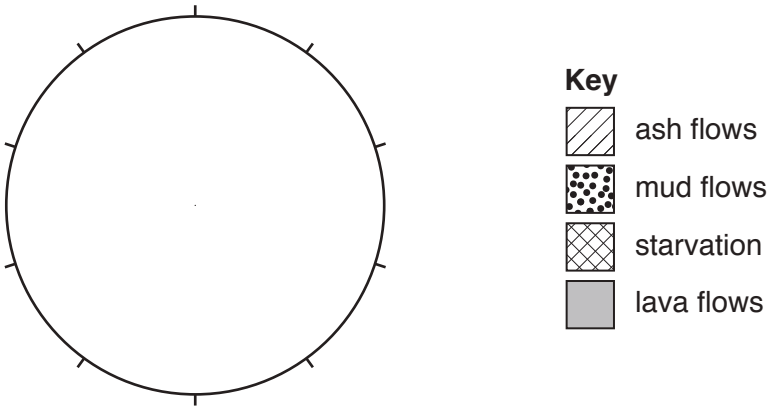
(i) Complete the labels at **X**, **Y** and **Z** to show the features of this volcano. [3]



(ii) The table shows the main causes of death after 10 volcanic eruptions.

Convert the information in the table into percentages and complete the pie graph using the key.

main cause of deaths	number of volcanic eruptions	percentage
ash flows	2	
mud flows	5	
starvation	2	
lava flows	1	



[3]

(iii) Suggest reasons why fewer people are killed during a volcanic eruption than during an earthquake.

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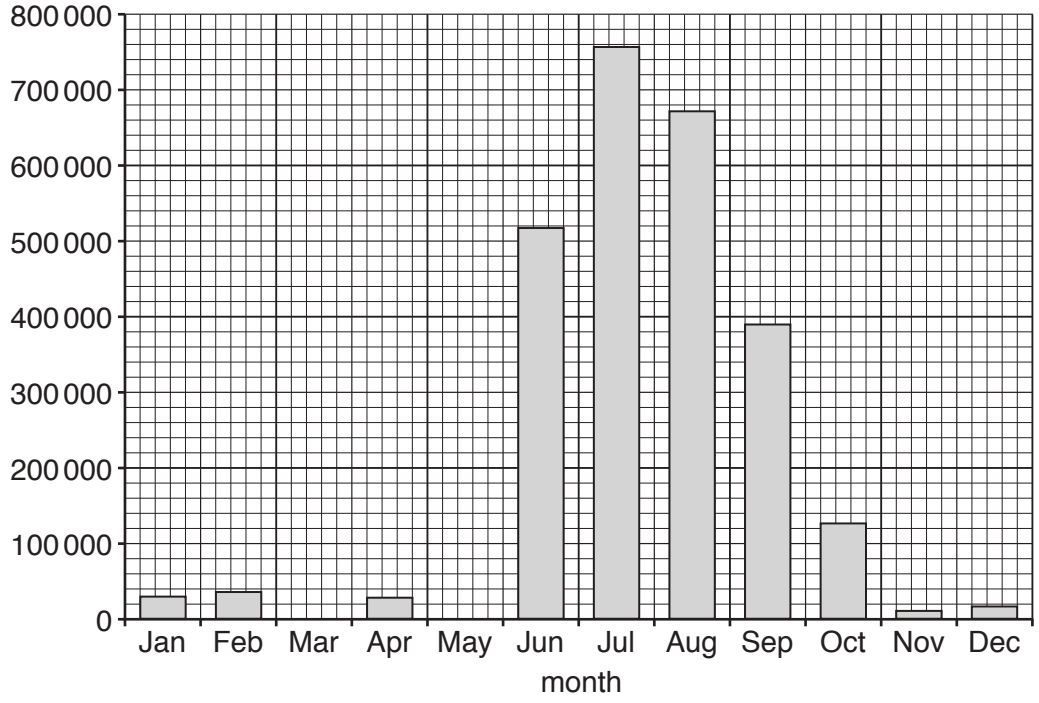
(d) Yellowstone National Park is famous for wildlife and volcanic activity. The graph shows average visitor numbers per month to Yellowstone National Park.



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(i) Complete the bar graph by plotting the following information and labelling the *y*-axis:

March	20 000 visitors
May	200 000 visitors

[3]

(ii) State which three months have the most visitors.

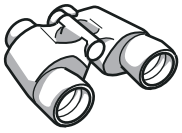
.....[1]

(iii) State how many more people visit the park in May than in March.

.....[1]

(iv) Visitors come to see the wildlife in Yellowstone National Park. The sign shows some information given to visitors.

- Keep a safe distance from wildlife (at least 90 m from bears and wolves)
- Do not feed the animals
- Use binoculars to view the animals



Suggest how this information protects both visitors and wildlife.

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(e) (i) Geothermal power can be generated in volcanic regions.

Describe **three** advantages of using geothermal power compared to other energy sources.

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(ii) Other than for tourism and geothermal energy, suggest why people continue to live in regions with volcanic activity.

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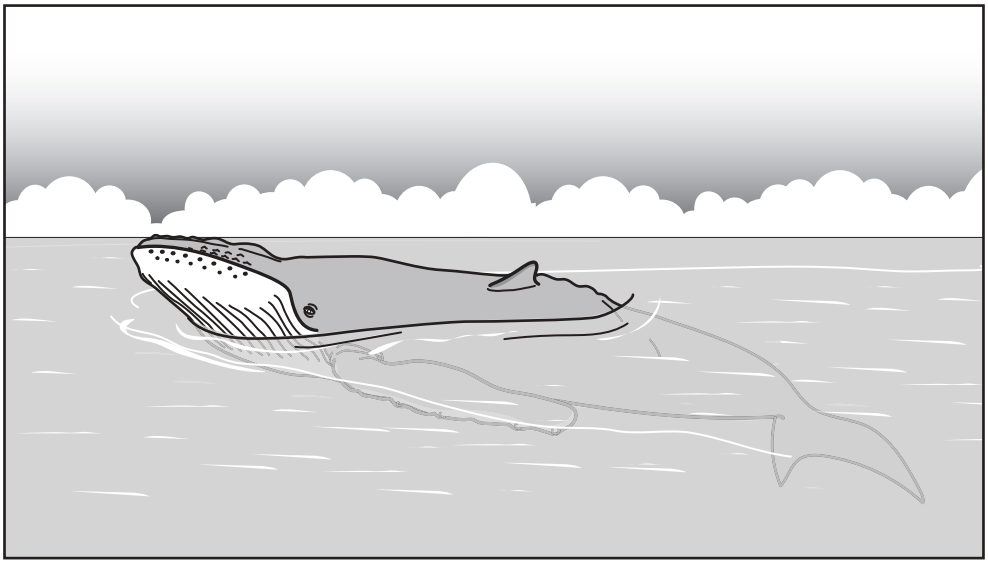
(f) The following information is about whale watching.

- 13 million people took part in whale watching tours in 2008 in 119 countries
- This created an income of 2.1 billion US dollars
- 13,200 people were employed in over 3,000 tour companies
- Whale watching is set to increase by 10% each year



(i) State what is meant by the term *ecotourism*.

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.....[1]

(ii) State **two** benefits of whale watching stated in the information.

1 .....

2 .....

[2]

(iii) Suggest how whale watching helps to conserve the whales.

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.....[1]

(g) Suggest how the development of tourism can damage the environment.

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