Cambridge Assessment International Education

Cambridge International AS Level

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

2746734004

ENVIRONMENTAL MANAGEMENT **8291/11**

Paper 1 Lithosphere and Atmosphere **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.

Section A

Answer **all** questions in this section.

Write your answers in the spaces provided.

1 **(a)** Fig. 1.1 is a diagram of the structure of the Earth.

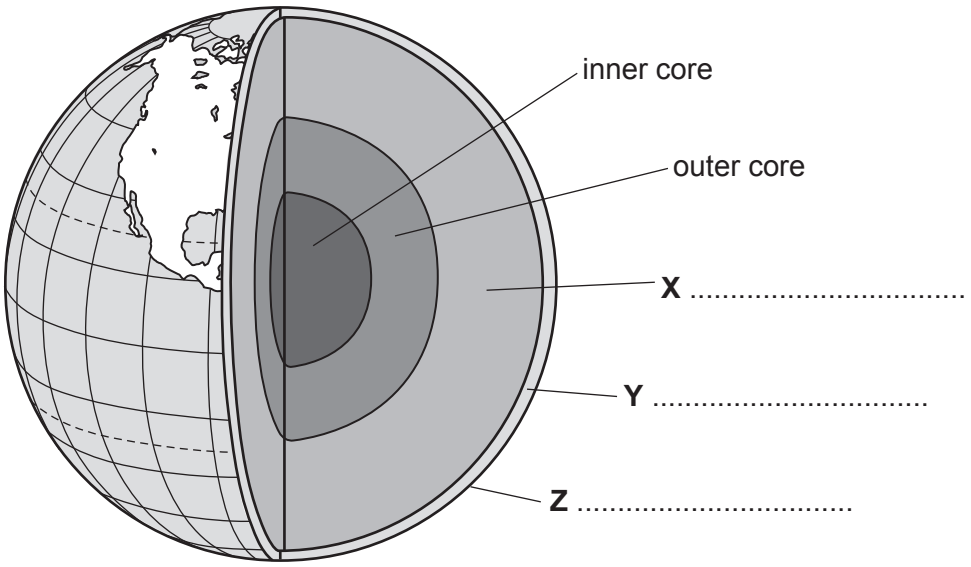

Fig. 1.1

Complete the labels for layers **X**, **Y** and **Z** on Fig. 1.1. [3]

(b) Fig. 1.2 is a diagram to show how seismic waves travel through the Earth.

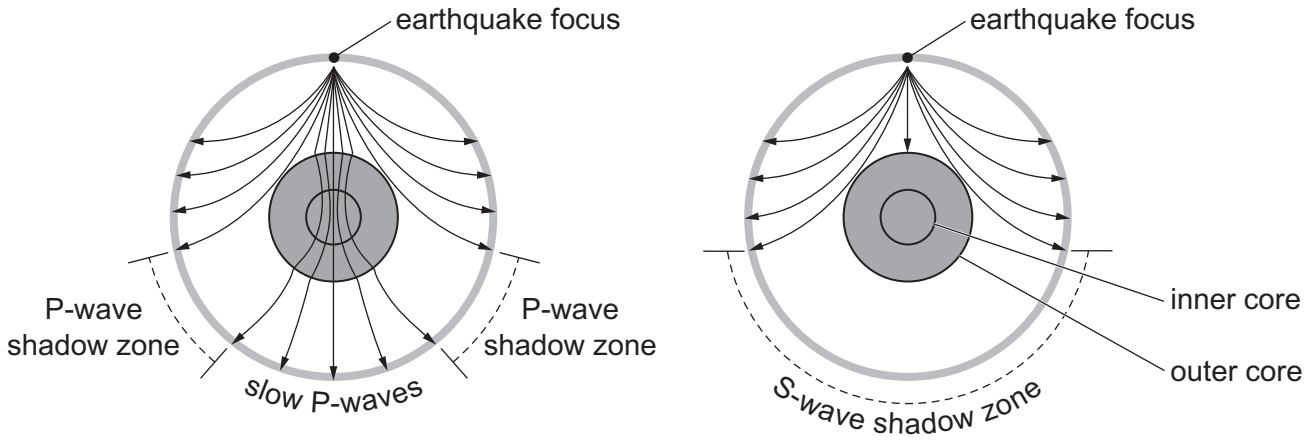

Fig. 1.2

(i) Using Fig. 1.2, describe the path of P and S seismic waves as they travel from the earthquake focus.

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..... [3]

(ii) Explain how seismic wave data provides evidence of the Earth's structure.

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..... [4]

(c) Fig. 1.3 is a map of Japan showing the location of a large earthquake that occurred in 2011.

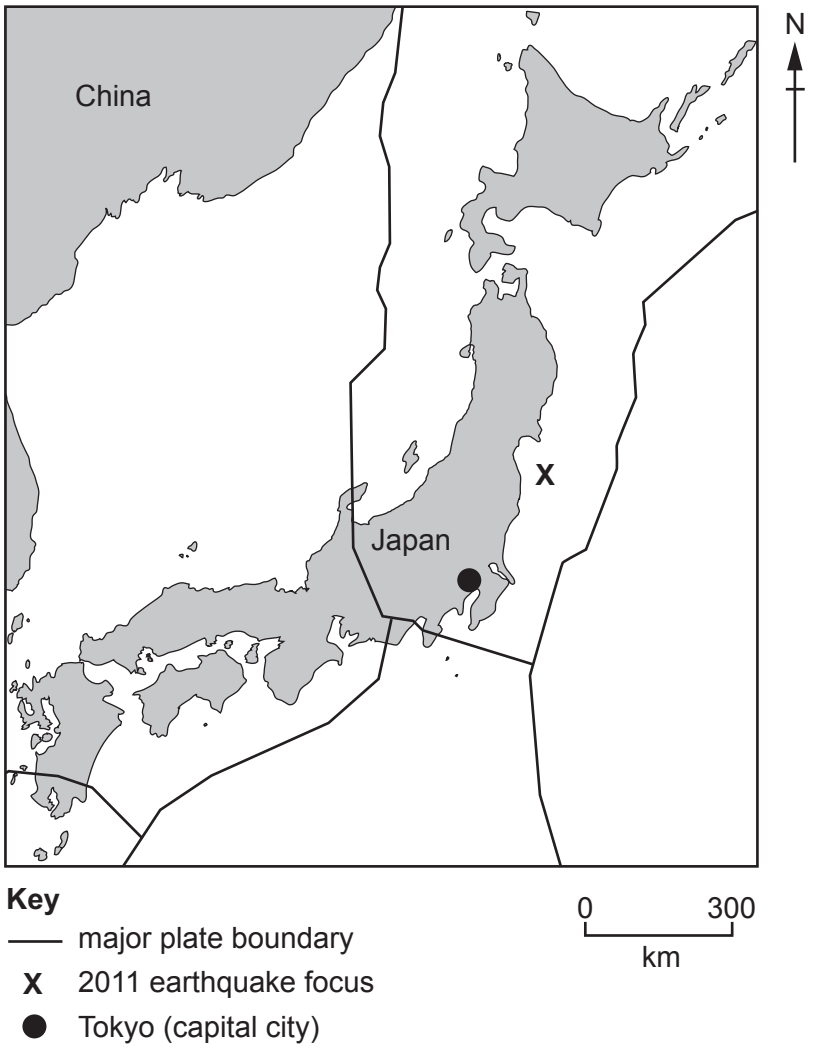

Fig. 1.3

(i) Explain why the earthquake occurred at location **X**, shown on Fig. 1.3.

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..... [2]

(ii) Suggest why the earthquake caused a tsunami to reach Japan. Refer to Fig. 1.3 in your answer.

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..... [2]

(iii) Early warning systems are one strategy to limit damage and loss of life from earthquakes. Residents of Tokyo received a warning one minute before the earthquake shook the city.

Suggest how this strategy limited damage and loss of life in Tokyo.

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..... [2]

(iv) Describe **two** strategies, other than early warning systems, which could be used to limit damage and loss of life from earthquakes.

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..... [4]

[Total: 20]

2 **(a)** Fig. 2.1 is a simplified diagram of the formation of ground level ozone.

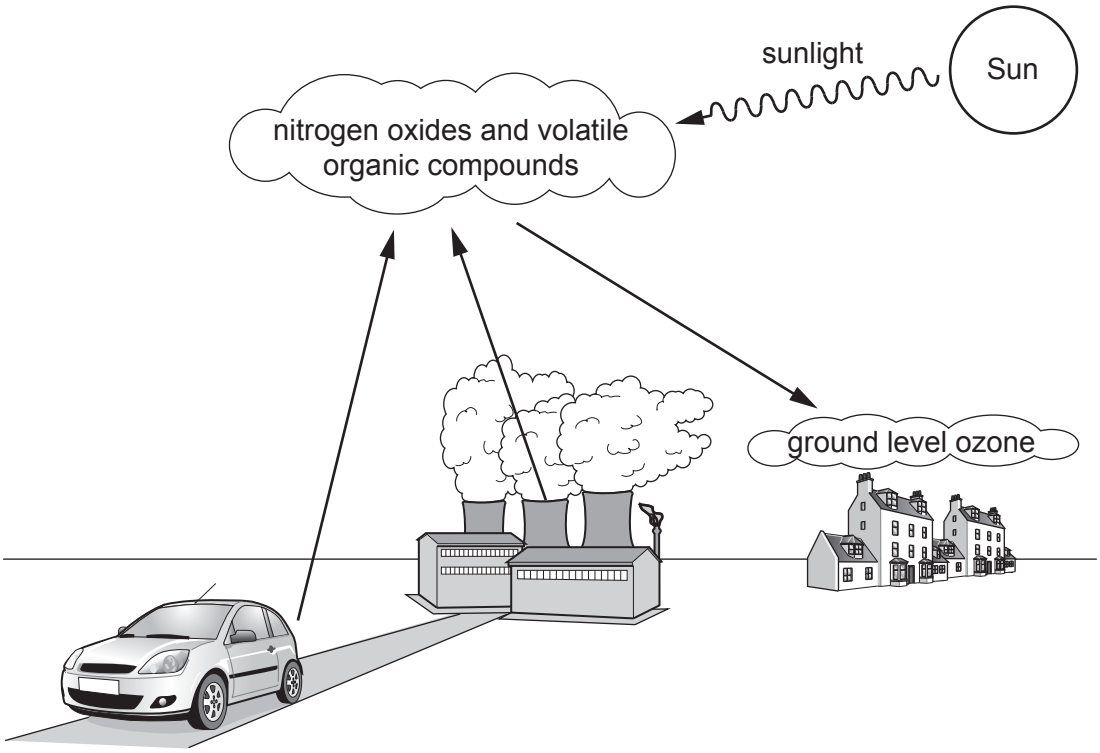

Fig. 2.1

(i) Emissions of nitrogen oxide and volatile organic compounds lead to the formation of ground level ozone.

State the name of **two** other atmospheric pollutants which could be produced by the human activity shown in Fig. 2.1.

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2 .....

[2]

(ii) Describe how ground level ozone is formed from vehicle emissions.

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(b) The concentration of ground level ozone is a measure of air quality.

Fig. 2.2 shows the number of days the concentration of ground level ozone exceeded the safe limit in two cities, **A** and **B**, from 2000 to 2016.

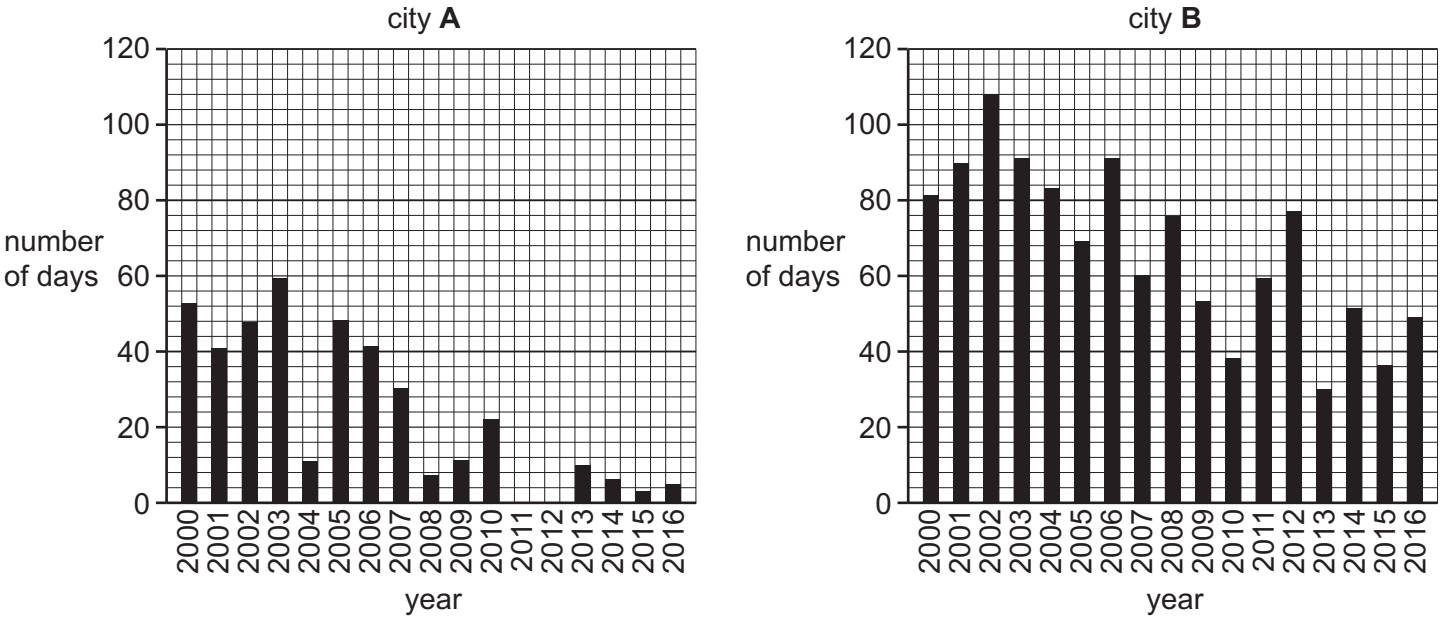

Fig. 2.2

(i) Complete Fig. 2.2 using the data from Table 2.1.

Table 2.1

city **A**	number of days
2011	33
2012	50

[1]

(ii) State the year that city **B** had the most number of days when the concentration of ground level ozone exceeded the safe limit, shown in Fig. 2.2.

..... [1]

(iii) Suggest **one** health problem for people on days when air quality is poor.

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..... [1]

(iv) Suggest reasons for differences in the air quality between city **A** and city **B** shown in Fig. 2.2.

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(c) Fig. 2.3 shows the average noise level in Las Vegas, USA, measured from 2014 to 2019.

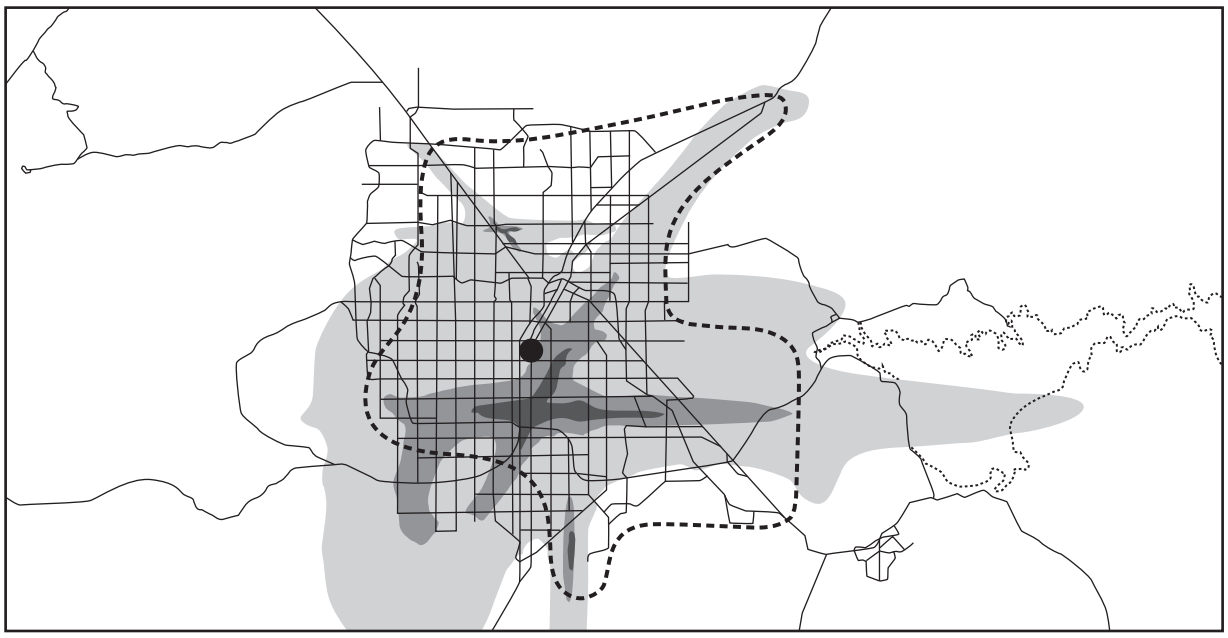

Fig. 2.3

(i) Describe the pattern in average noise level shown in Fig. 2.3.

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..... [3]

(ii) Explain strategies to manage noise levels in urban areas.

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..... [5]

[Total: 20]

Section B

Answer **one** question from this section.

Write your answers on the separate answer paper provided.

3 Fig. 3.1 shows the total carbon dioxide emissions of two types of car: internal combustion engine cars and electricity-powered cars.

Carbon dioxide emissions occur during production of each car and its battery. In addition, for internal combustion engine cars, carbon dioxide emissions occur during the production of fuel for the internal combustion engine. For electricity-powered cars, carbon dioxide emissions occur during the generation of electricity to power the car.

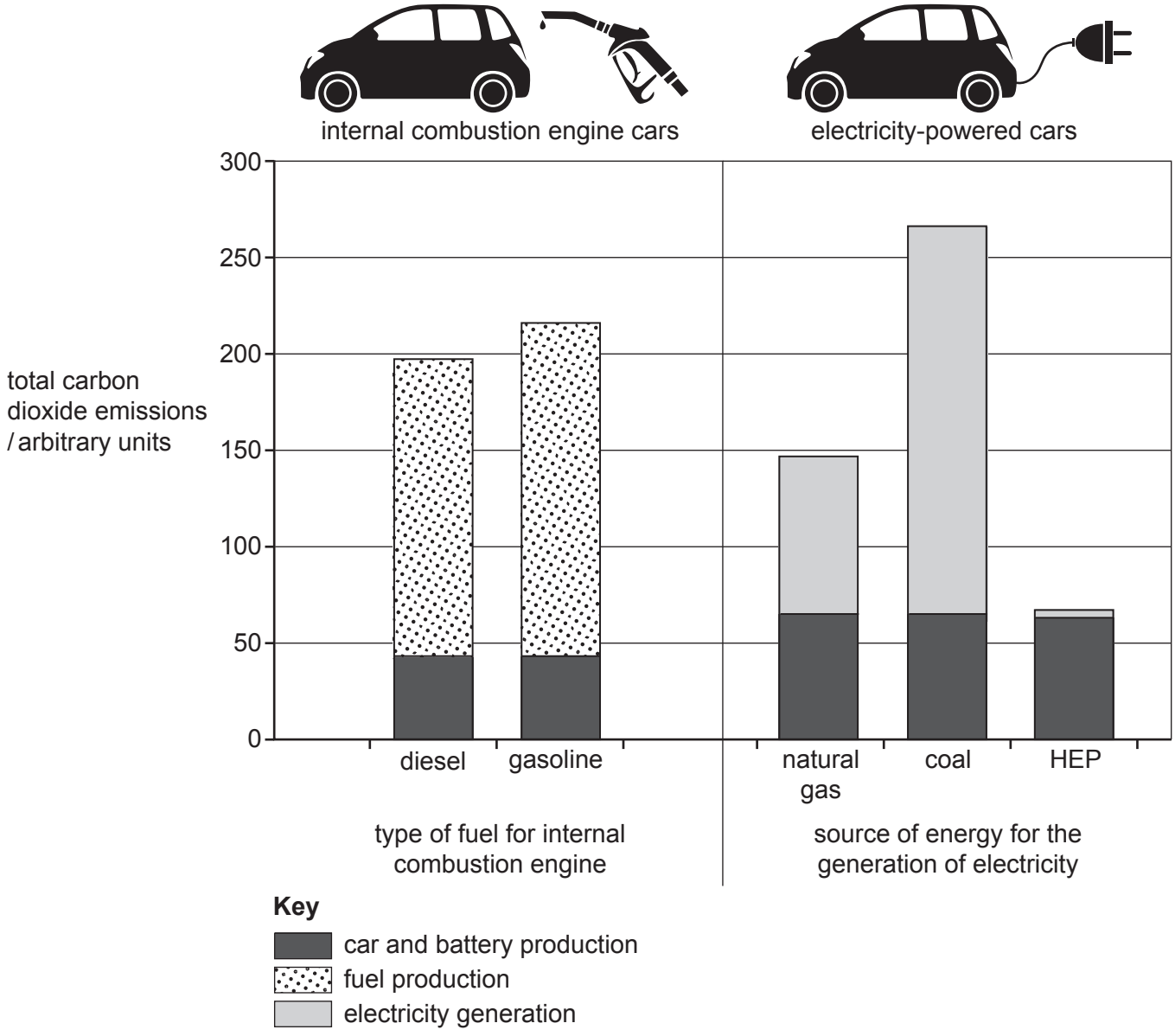


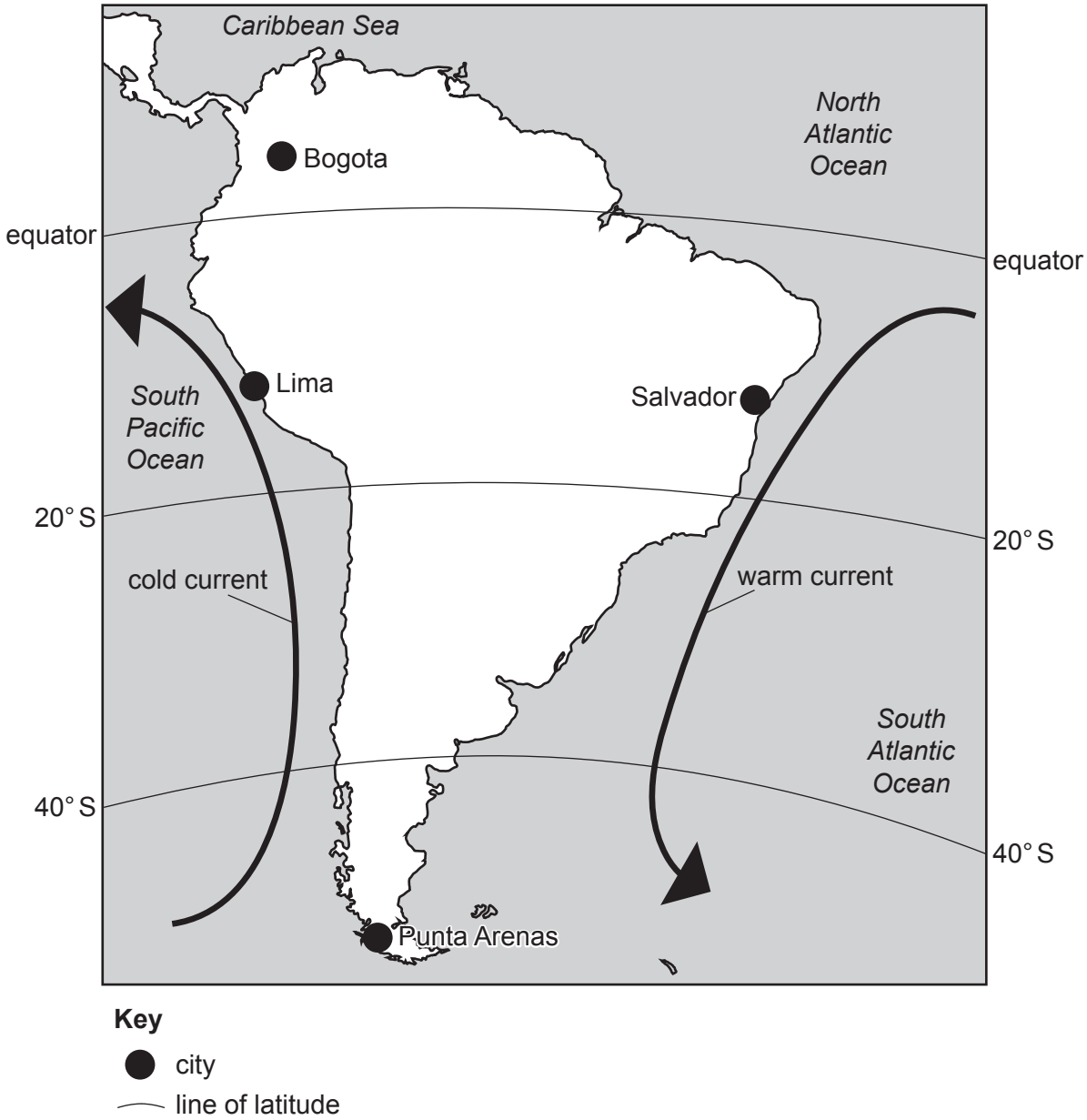
Fig. 3.1

(a) Discuss how the type of car can have different impacts on the environment. Use information from Fig. 3.1 to support your answer. [10]

(b) Discuss the extent to which humans have been successful at managing the resources of the lithosphere for future generations. Refer to examples in your answer. [30]

[Total: 40]

4 Fig. 4.1 shows information on South America.



city	altitude / m	average annual temperature / °C	average total annual precipitation / mm
Bogota	2546	13	824
Lima	154	20	6
Punta Arenas	38	6	376
Salvador	51	25	2099

Fig. 4.1

(a) Explain reasons for the differences in climate in the cities shown in Fig. 4.1. [10]

(b) 'The effects of drought can be equally damaging for MEDCs and LEDCs.'

Discuss the extent to which you agree with this statement. [30]

[Total: 40]

5 Fig. 5.1 shows soil characteristics on a slope.

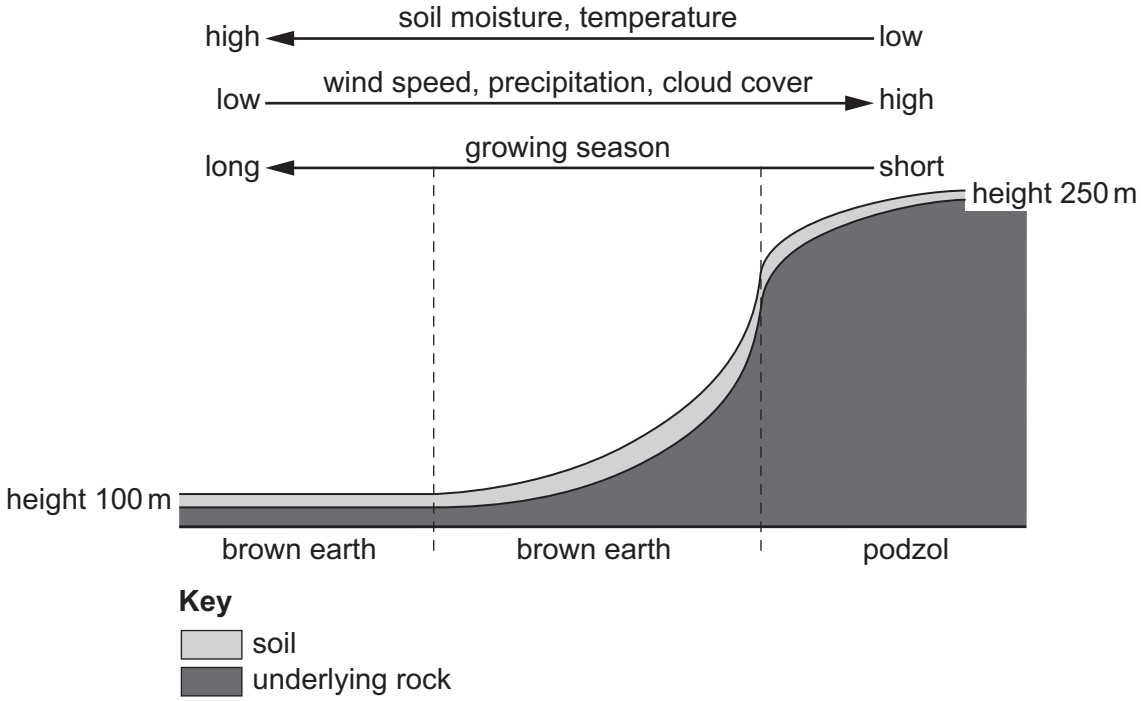


Fig. 5.1

(a) Explain the factors that affect soil formation and characteristics on the slope shown in Fig. 5.1. [10]

(b) 'Feeding an increasing world population requires the sustainable management of soil.'

Evaluate strategies for the sustainable management of soil. [30]

[Total: 40]