

Centre Number	Candidate Number	Name
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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education
Advanced Subsidiary Level and Advanced Level

ENVIRONMENTAL MANAGEMENT

8291/01

Paper 1 Lithosphere and Atmosphere

May/June 2005

1 hour 30 minutes

Additional Materials: Answer Booklet/Paper

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 a soft pencil for any diagrams, graphs, tables or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Section A

Answer **all** questions.

Write your answers in the spaces provided on the question paper.

Section B

Answer **one** question from this section.

Answer the question on the separate answer paper provided.

At the end of the examination,

1. fasten all separate answer paper securely to the question paper;
2. enter the question number from Section B in the grid opposite.

If you have been given a label, look at the details. If any details are incorrect or missing, please fill in your correct details in the space given at the top of this page.

Stick your personal label here, if provided.

For Examiner's Use	
Section A	
1	
2	
Section B	
Total	

This document consists of **10** printed pages and **2** blank pages.



Section A

Answer **all** questions in this section.

Write your answers in the spaces provided.

- 1 (a) Fig. 1.1 shows the structure of the Earth and the behaviour of seismic waves generated by an earthquake.

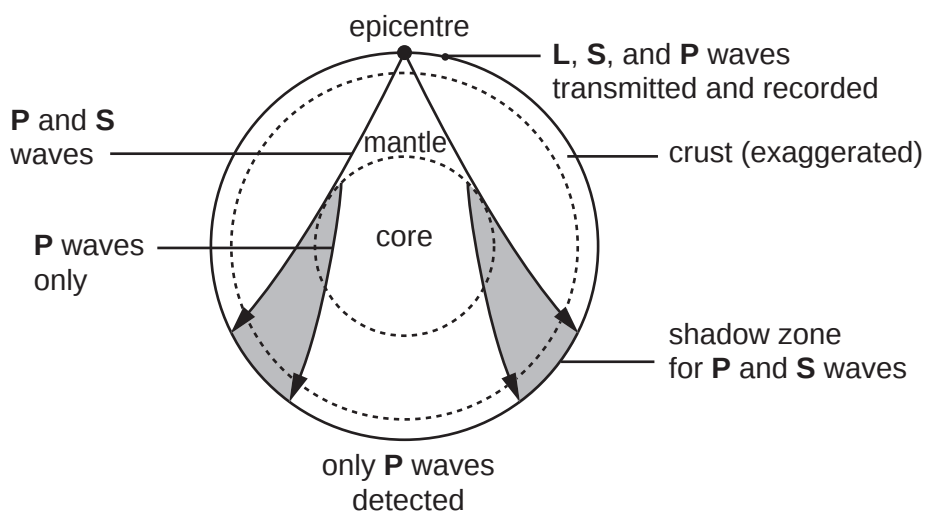


Fig. 1.1

- (i) What are *seismic waves*?

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[1]

- (ii) Distinguish between **P** and **S** waves.

.....

[2]

- (iii) Why are **P** waves refracted when passing from the mantle to the core of the Earth?

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[1]

- (iv) Describe and explain the formation of a shadow zone for **P** and **S** waves.

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.....[3]

- (v) Suggest how seismic waves obtained from more than two seismometers can be used to locate the focus of an earthquake. You may use a labelled diagram to illustrate your answer.

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.....[3]

(b) Fig. 1.2 contains information on a shallow focus earthquake.

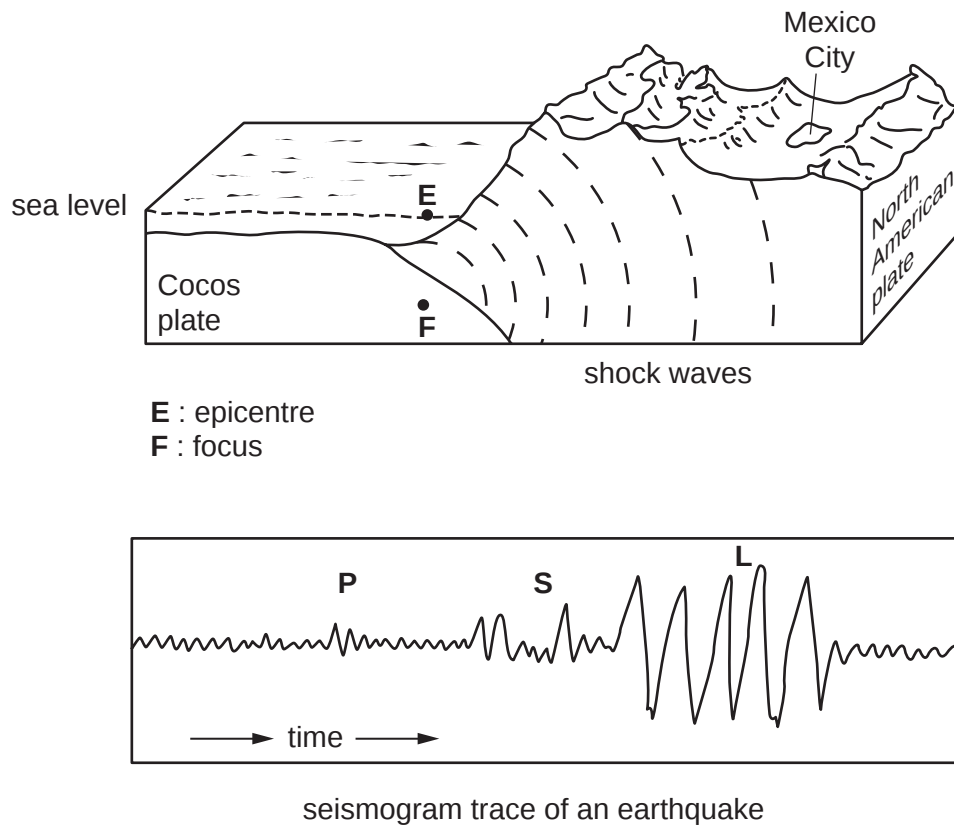


Fig. 1.2

(i) Explain the terms *epicentre* and *focus* of an earthquake.

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.....[2]

(ii) What are **L** waves and why do seismographs show them arriving after the **P** and **S** waves?

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.....[2]

(iii) Suggest the likely effects of the passage of **L** waves through

- an area of loose sediment: e.g. river or lake deposits,
- an area of compact rock.

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.....[2]

(c) Outline **two** ways in which buildings can be constructed to reduce the possible damage caused by an earthquake.

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[20 marks]

- 2 (a) Fig. 2.1 is a generalised map of the global pattern of air circulation and air pressure at sea level. It does not show the effects of major continental areas.

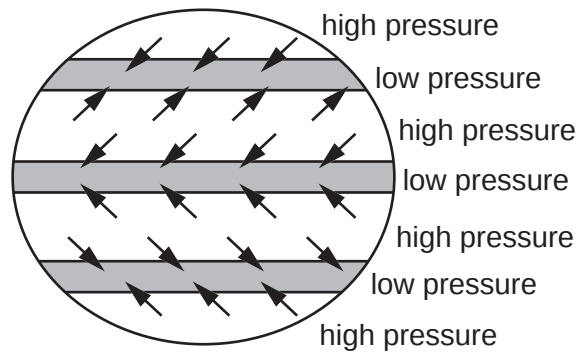


Fig. 2.1

- (i) Outline how the movement of air shown in Fig. 2.1 is influenced by atmospheric pressure and the Earth's rotation.

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- (ii) Describe and explain the effects of large continental areas upon this pattern of air movement in summer.

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(b) Fig. 2.2 contains a climatic chart for San Francisco and a map of California.

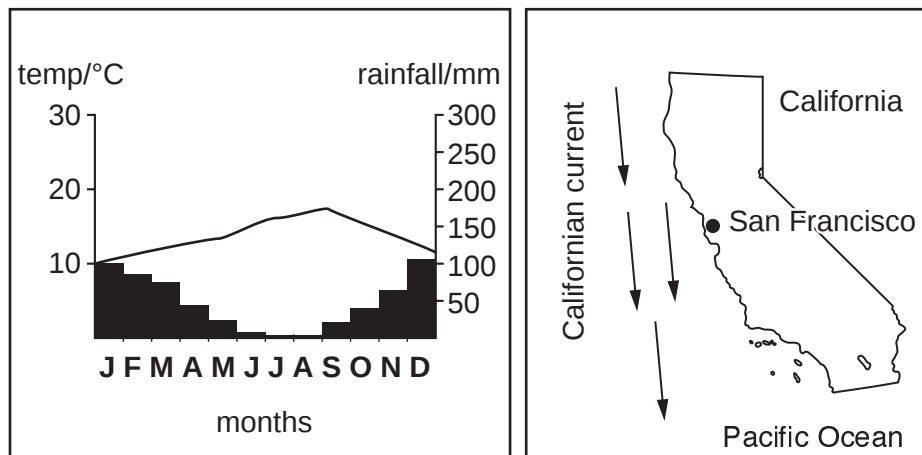


Fig. 2.2

(i) Describe the pattern of temperature and rainfall for San Francisco.

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.....[4]

(ii) Some places on the same line of latitude as San Francisco have a mean winter temperature of 8°C and a mean summer temperature of 26°C. Explain why San Francisco's annual temperature characteristics are different from those of these other places.

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.....[3]

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- A black and white satellite image of Hurricane Mitch. The hurricane is a large, circular storm system with a distinct eye in the center. It is positioned over the Caribbean Sea, with the northern coast of Central America visible on the left. Labels for Yucatan, Belize, Honduras, Nicaragua, Cuba, and Jamaica are present. The text "Hurricane Mitch" and "October 26, 1998" is at the bottom.

[6]

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Section B

Answer **one** question from this section.

Answers must be in continuous prose.

Write your answers on the separate answer paper provided.

- 3 (a) Fig. 3.1 contains data about levels of different types of air pollution from cities.

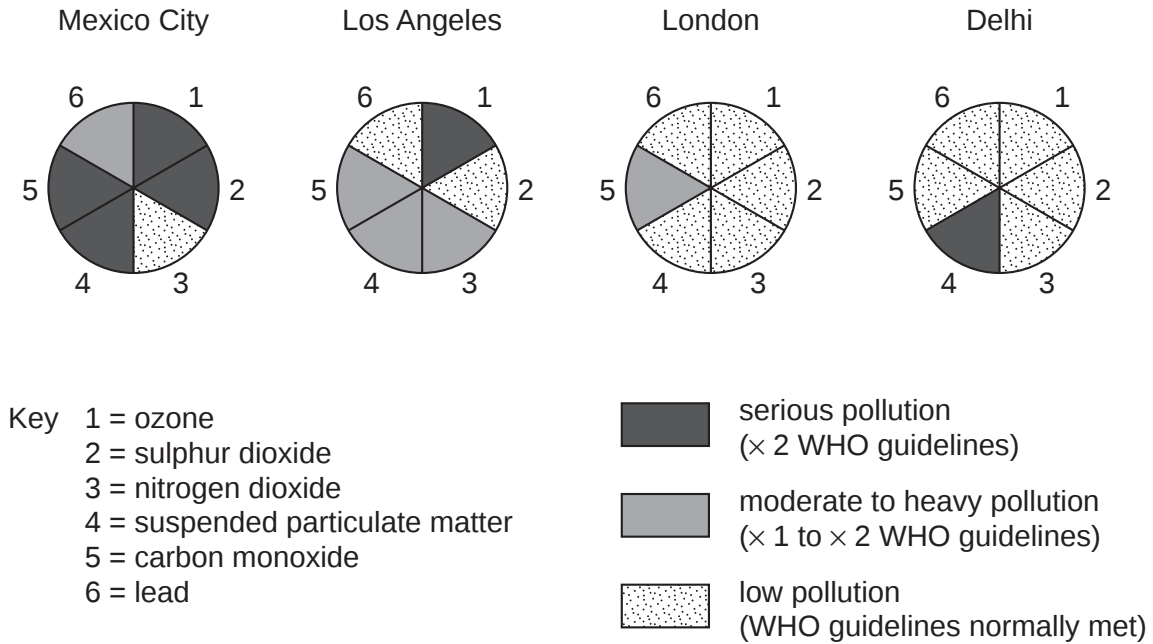


Fig. 3.1

Compare the data and suggest reasons for the differences in the levels of air pollution. [10]

- (b) Using examples of urban areas with which you are familiar, describe and evaluate the measures currently being undertaken to manage **either** land pollution **or** air pollution. [30]

[40 marks]

- 4 (a) Describe how biotic and abiotic processes have worked together to produce the soil profile in Fig. 4.1. [10]

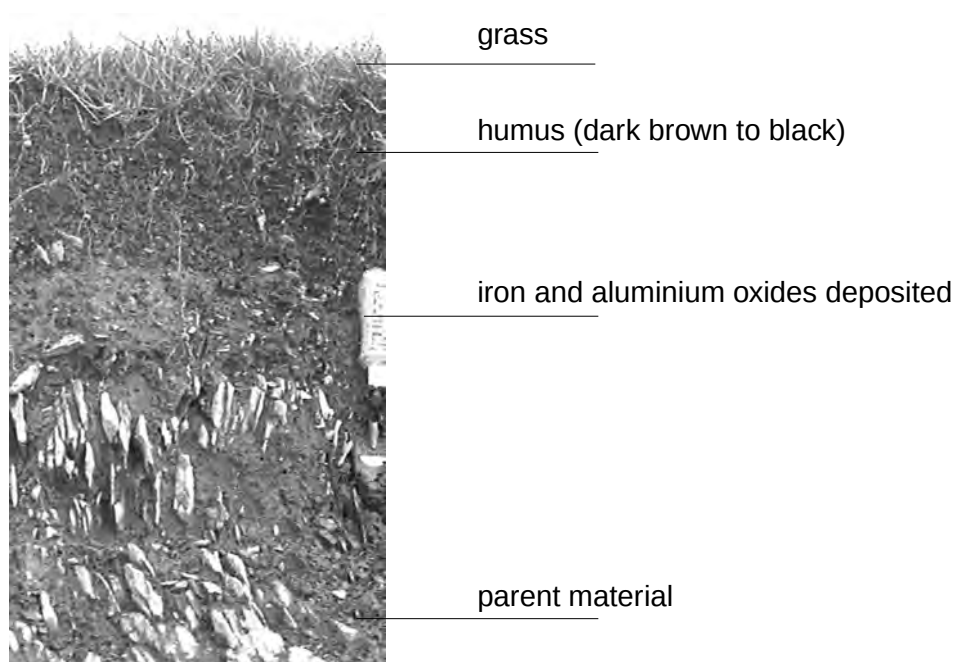


Fig. 4.1

- (b) Using examples you have studied, describe how human activity can cause soil erosion as well as lead to a more sustainable use of soils. [30]

[40 marks]

- 5 (a) Using examples in each case, outline the differences between renewable and non-renewable resources. [10]

- (b) Describe and explain how policies aimed at encouraging the use of more sustainable sources of energy in more economically developed countries (MEDCs) might differ from those of less economically developed countries (LEDCs). [30]

[40 marks]

Copyright Acknowledgements:

Fig. 3.1 Adapted from *The Global Casino: An Introduction to Environmental Issues* by N Middleton p191

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