UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education
Advanced Subsidiary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER



**ENVIRONMENTAL MANAGEMENT** **8291/13**

Paper 1 Lithosphere and Atmosphere **May/June 2010**

**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.
DO **NOT** WRITE IN ANY BARCODES.

**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.

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

This document consists of **11** printed pages and **1** blank page.

## Section A

Answer **all** questions in this section

*For Examiner's Use*

**1** **(a)** Study Fig. 1.1 which shows how P and S seismic waves pass through the Earth. Answer the questions that follow.

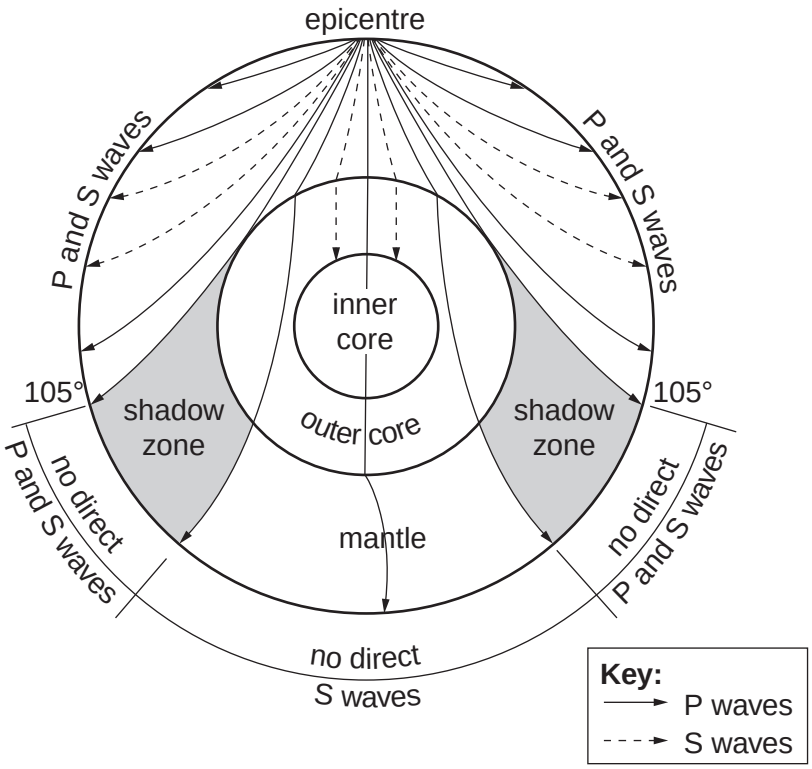


**Fig. 1.1**

**(i)** What is meant by the term *seismic waves*?

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.....[2]

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

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**(iii)** Explain why no direct P and S waves are recorded in the shadow zones indicated in Fig. 1.1.

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.....[3]

**(b)** Seismic waves from an earthquake can be detected using a seismograph. The time difference between a detection of P waves and S waves is related to the distance of the seismograph from the epicentre of the earthquake.

The curved line on Fig. 1.2 shows the distance out from seismograph 1 of the epicentre.

**(i)** Draw, onto Fig. 1.2, two more curved lines to show how it is possible to use three seismographs to find the earthquake's epicentre. [1]

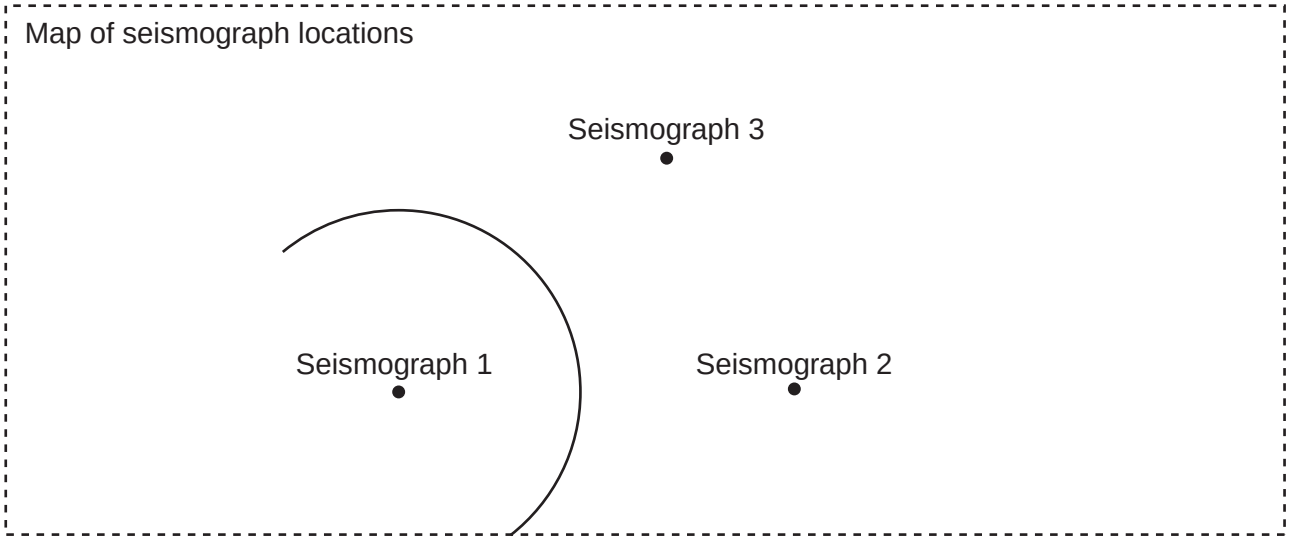


**Fig. 1.2**

**(ii)** Mark with an **X** on Fig. 1.2 the location of the epicentre. [1]

**(iii)** Give **one** reason why recordings from at least three seismographs are needed in order to locate the epicentre of an earthquake.

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.....[1]

**(c)** Describe and suggest reasons for the pattern of earthquakes in the period 1963 to 1998 shown in Fig. 1.3.

*For Examiner's Use*

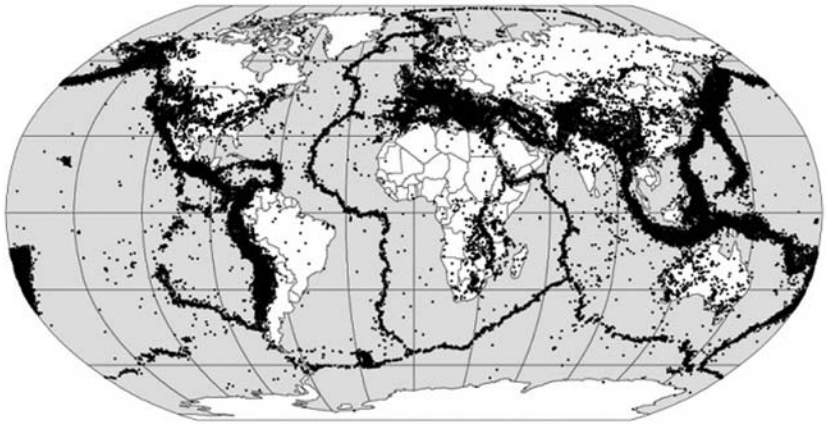

**Fig. 1.3**

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**(d)** Describe and justify **two** methods that can be used to predict the likelihood of a future earthquake in a given locality.

*For Examiner's Use*

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[Total: 20]

**2** **(a)** Fig. 2.1 shows a barometric chart for a summer day in the southern hemisphere.

*For Examiner's Use*

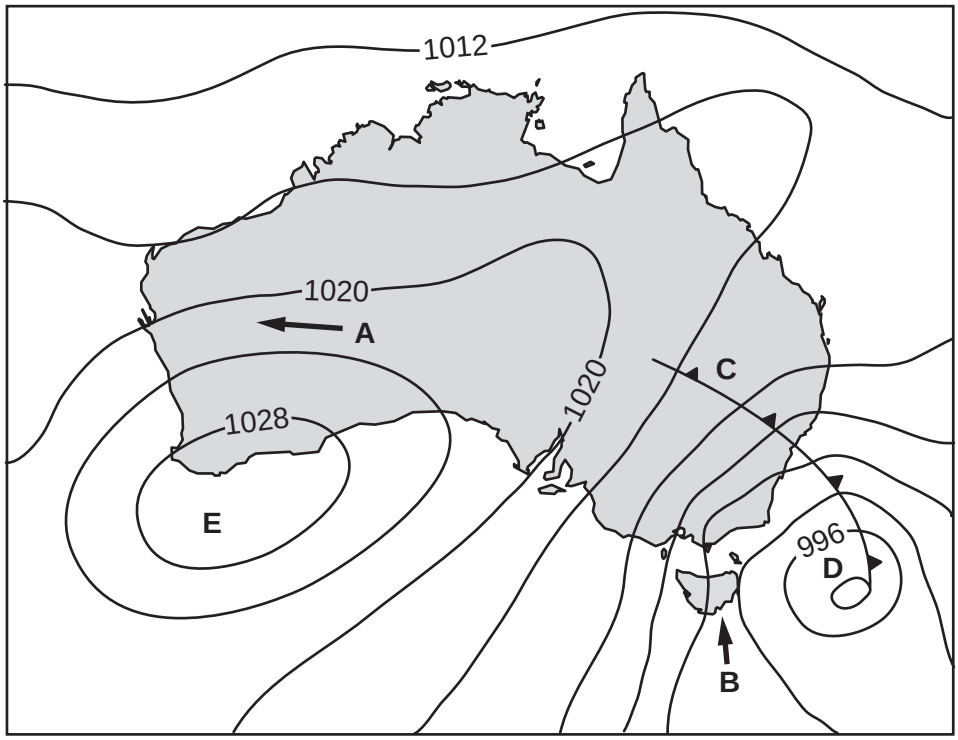


**Fig. 2.1**

**(i)** Write the values 1016 mb and 1000 mb in their correct positions in Fig. 2.1. [2]

**(ii)** The arrows at points **A** and **B** show the horizontal direction of air movement at these points. Explain why air movement occurs in these directions.

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.....[2]

**(iii)** Name the weather systems to be found at locations **C**, **D** and **E**.

**C** .....

**D** .....

**E** .....[3]

**(iv)** Describe and give a reason for the weather conditions at each of the following:

*For Examiner's Use*

**C** .....

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**D** .....

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.....[4]

**(v)** Describe how satellite photography assists the process of interpreting weather conditions.

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**(b)** Fig. 2.2 shows how wind direction in a coastal area may change between day and night.

*For Examiner's Use*

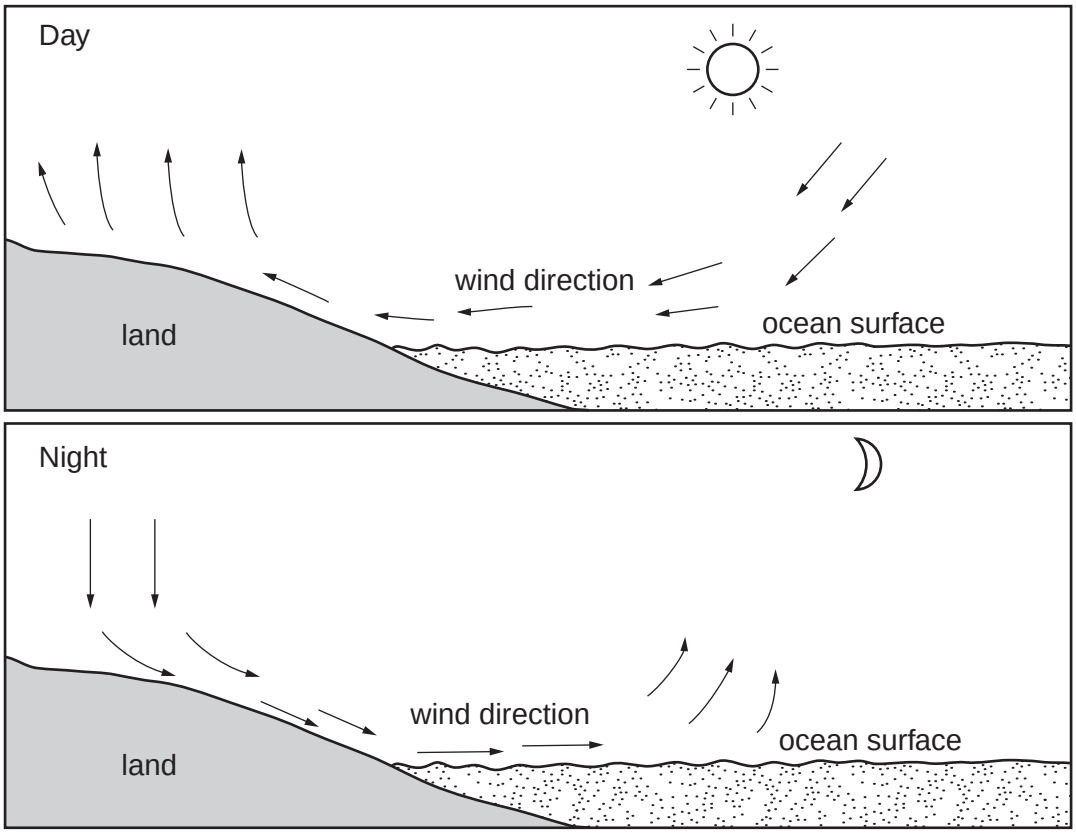


**Fig. 2.2**

Suggest reasons for the changes between day and night shown in Fig. 2.2.

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[Total: 20]

## Section B

Choose **one** question from this section

**3** **(a)** Rocks undergo weathering by chemical and mechanical processes. Which process occurs at a place, and how quickly, depends on the climate of that place.

Use Fig. 3.1 to describe how temperature and precipitation interact to affect the type and rate of rock weathering. [10]

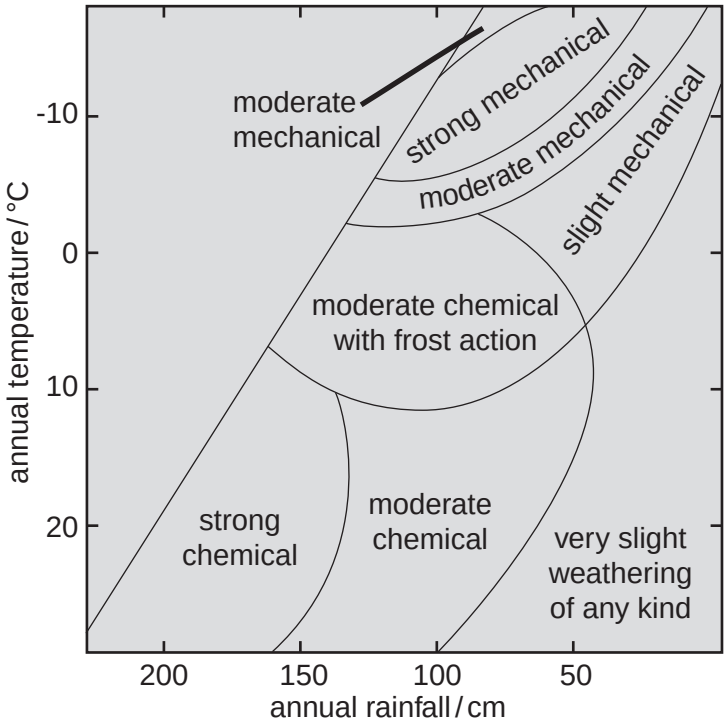


**Fig. 3.1**

**(b)** Slope instability is a major hazard in some situations.

Using examples with which you are familiar, describe how far human activity contributes to slope instability. Assess **two** ways in which slope instability might be managed. [30]

[Total: 40]

**4** **(a)** Carbon monoxide, nitrogen oxides and sulphur dioxide contribute to the atmospheric pollution of many cities. Briefly describe the sources and effects of these types of pollution. [10]

**(b)** With reference to urban areas with which you are familiar, describe and evaluate the strategies that have been adopted to reduce atmospheric pollution. [30]

[Total: 40]

**5** **(a)** Briefly describe how a combination of human activity and natural processes contribute to the soil erosion shown in Fig. 5.1. [10]

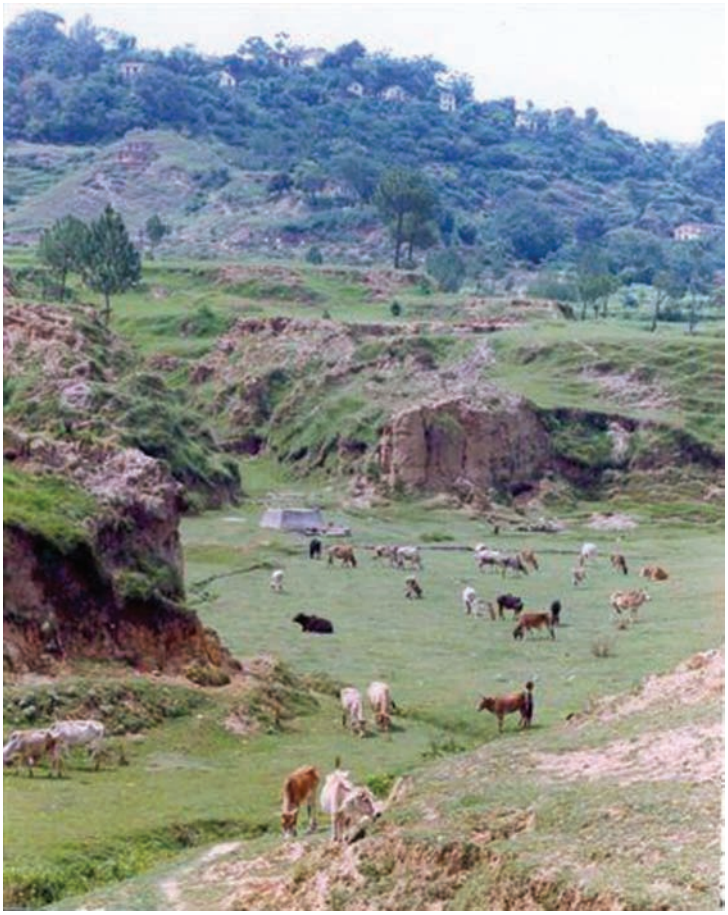

**Fig. 5.1**

**(b)** Using examples with which you are familiar, describe how the rapid development of an urban region can have negative effects upon its local environment. Assess two measures that could be adopted to reduce these effects. [30]

[Total: 40]

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