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

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

9306225032

ENVIRONMENTAL MANAGEMENT **8291/01**

Paper 1 Lithosphere and Atmosphere **October/November 2011**

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 **12** printed pages.

UNIVERSITY of CAMBRIDGE International Examinations

Section A

For Examiner's Use

Answer **all** questions in this section.

Write your answers in the spaces provided.

1 **(a)** Fig. 1.1 shows tectonic processes operating at a plate boundary.

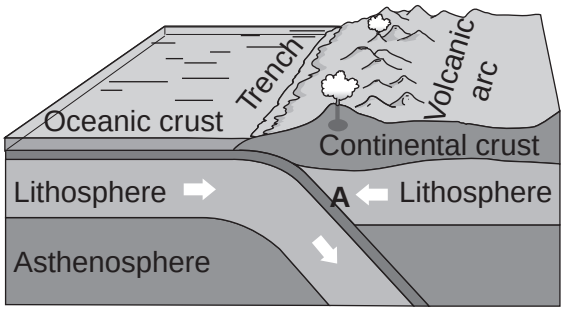

Fig. 1.1

(i) What is meant by the term *tectonic process*?

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(ii) Name the tectonic process occurring at **A**.

.....[1]

(iii) Describe the feature labelled trench in Fig. 1.1 and briefly explain how it is formed.

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..... [2]

(b) Fig. 1.2 is an example of volcanic activity that frequently occurs at plate boundaries of the type shown in Fig. 1.1.

For Examiner's Use

Fig. 1.2

(i) Describe the characteristic features of the volcanic eruption shown in Fig. 1.2.

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(ii) Explain why volcanic eruptions are common at this type of plate boundary.

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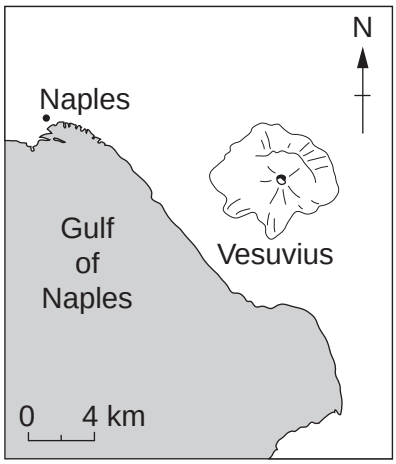
(c) Predicting the precise time at which a volcanic eruption might occur is difficult. Fig. 1.3 contains information on the monitoring of Mount Vesuvius.

For Examiner's Use



History: 30 major eruptions since AD 79; last major eruption 1944.
Monitoring including: 3 tilt meters to measure ground deformation, 370 surface survey sites.
12 seismic stations distributed around the volcano.
Geochemical stations that measure variations in the temperature and composition of gases.

Fig. 1.3

(i) Describe how tilt meters, seismometers and chemical analysis are used in the prediction of a future eruption of Mount Vesuvius.

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(ii) In planning for a future eruption, describe other measures that need to be taken into account in addition to monitoring.

For Examiner's Use

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[Total: 20]

2 **(a)** Fig. 2.1 shows mean monthly temperatures and rainfall for a tropical climate.

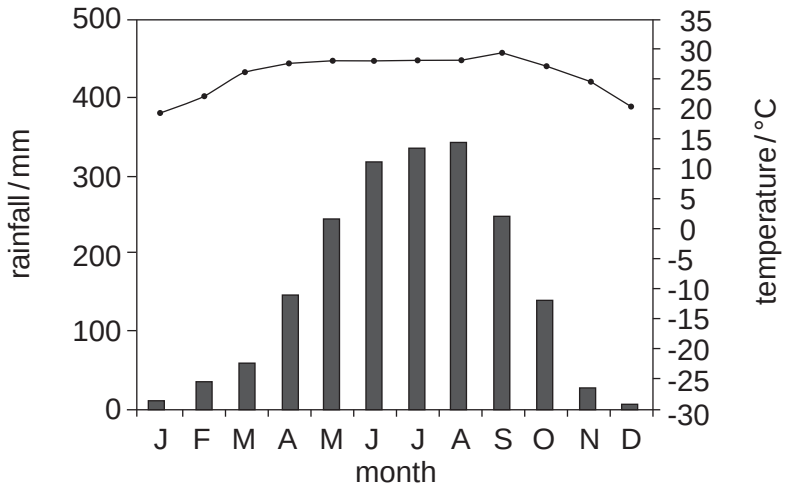

Fig. 2.1

(i) Explain why information for temperature and rainfall in climatic charts such as Fig. 2.1 is averaged over a period of at least 25 years.

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(ii) Calculate the annual range of temperature and rainfall shown in Fig. 2.1.

temperature range.....°C

rainfall range.....mm [2]

(iii) Describe the pattern of temperature and rainfall for the climatic area in Fig. 2.1.

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(iv) Using data from Fig. 2.1 outline **one** way in which human activity might be influenced by this climate.

For Examiner's Use

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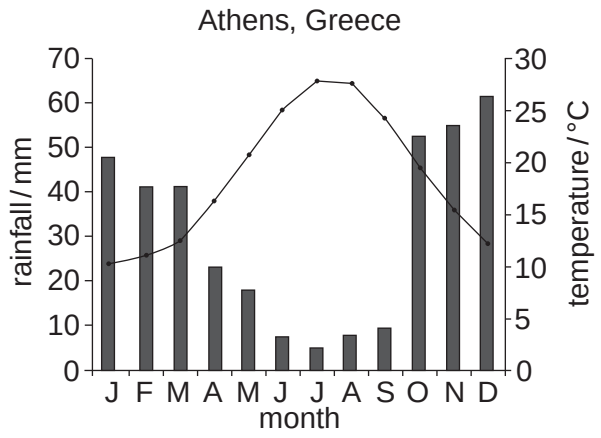
(b) Fig. 2.2 contains information on the climate of Greece and the fires that devastated areas of the country in the summer of 2009.

For Examiner's Use



The climate of Greece has seen a rise of about 1°C in both summer and winter temperatures in recent years.

A report said 'heat waves and drier land caused by climate change have combined with changes in land use, abandonment of rural areas and a lack of management of forest areas to make forests more flammable, leading to ever larger and more uncontrollable fires.'

Fig. 2.2

(i) Using the information contained in Fig. 2.2, describe how the climate may have contributed to the fires that have affected this region in recent years.

For Examiner's Use

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(ii) Use the information in Fig. 2.2 to suggest ways in which human activity may have contributed to the risk of fires in Greece.

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[Total: 20]

[Turn over

Section B

Answer **one** question from this section.

3 **(a)** Describe the process by which stratospheric ozone is depleted and briefly describe the effects ozone depletion may have upon the health of people and vegetation. [10]

(b) There are signs that the issue of stratospheric ozone depletion is responding to international actions. The issue of global warming, however, remains a major problem.

Describe the international agreements that have been reached in an attempt to solve these key environmental issues. Assess the extent to which MEDCs and LEDCs have been able to comply with agreements in respect of these two issues. [30]

[Total: 40]

4 **(a)** It is argued that the key to making coal-burning power plants more environmentally friendly is to capture the carbon dioxide by equipping them with carbon capture and storage technology.

Fig. 4.1 illustrates a scheme for doing this.

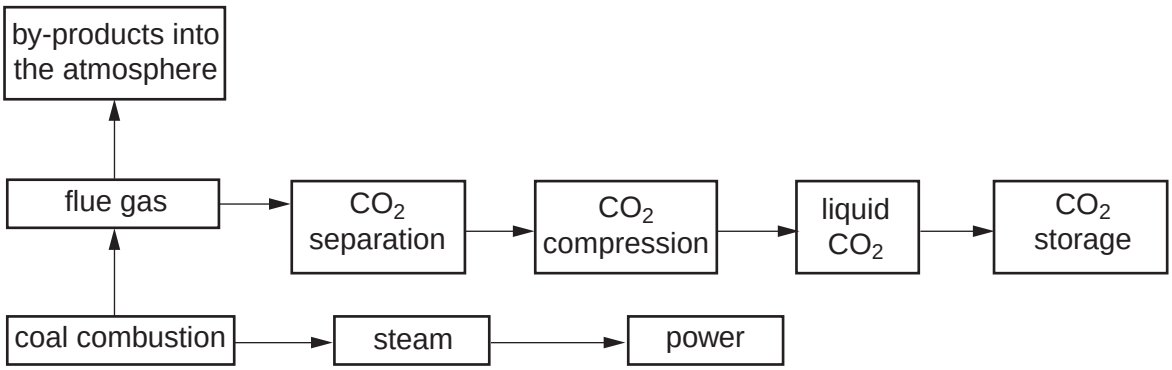


Fig. 4.1

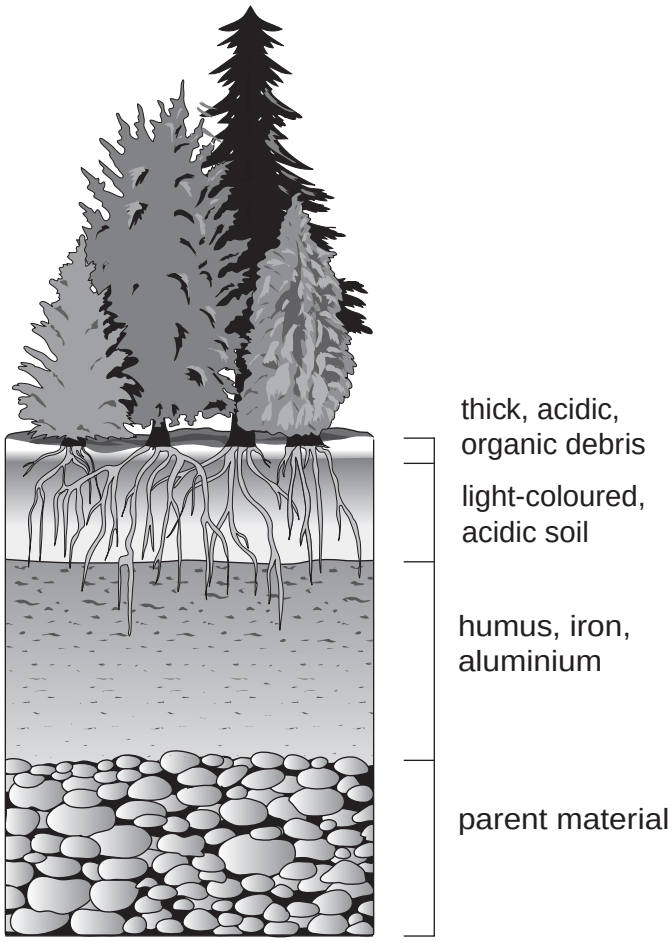
Describe **three** different advantages of the technique shown in Fig. 4.1. [10]

(b) Assess the extent to which the advantages of developing and utilising renewable sources of energy outweigh the disadvantages. Your answer should refer to examples from LEDCs and/or MEDCs. [30]

[Total: 40]

[Turn over

5 **(a)** Explain how vegetation, water infiltration and weathering have contributed to the soil profile in Fig. 5.1. [10]



coniferous forest soil

Fig. 5.1

(b) With reference to examples you have studied, assess the extent to which human activity has caused deterioration in soil quality. Assess **two** methods that could be used to restore degraded soils. [30]

[Total: 40]