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

CANDIDATE NAME

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

ENVIRONMENTAL MANAGEMENT **8291/01**

Paper 1 Lithosphere and Atmosphere **May/June 2007**

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 ON 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.

Write your answers in the spaces provided.

1 Slope stability is a result of natural processes and human activity.

(a) (i) Name **one** physical weathering process that produces angular fragments of rock.

.....[1]

(ii) Name **one** chemical weathering process that produces fine grains of sediment.

.....[1]

(iii) Describe the role of water in **one** of the weathering processes you have named in **either** (i) **or** (ii).

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.....[2]

(b) Fig. 1.1 shows a hill slope in which weathered angular fragments of rock rest on the surface.

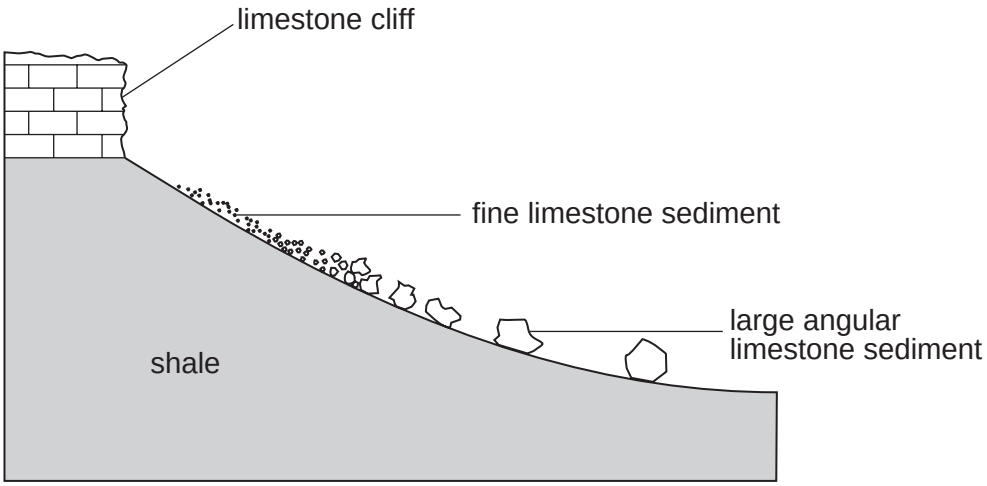

Fig. 1.1

(i) Describe and explain the distribution of fine and large sediment on the slope in Fig. 1.1.

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.....[4]

(ii) State and explain **one** situation in which the sediment resting on the slope in Fig. 1.1 would become unstable.

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.....[3]

(c) Soil erosion is a problem in many parts of the world. Erosion rates vary widely ac to land use, slope angle and the extent of the surface covered by vegetation. The contained in Table 1.2 were obtained from research into slope failure in the middle hi of Southern Nepal.

Table 1.2

Category of land use	Soil loss / tonnes per hectare	Slope angle	Extent of surface covered by vegetation / % of the area within the category.
forest	0.1	all slope angles	95
partly cleared forest	5.0	steep slopes	50
grassland site 1	0.1	gentle slopes	90
grassland site 2	0.5	medium slopes	75
rice terraces upper slopes	8.0	steep slopes	8
rice terraces lower slopes	0.2	gentle slopes to flat	0.2
bare ground	18.0	most slope angles	5

Describe and explain how land use, slope angle and the percentage cover of vegetation have produced the variations in soil loss shown in Table 1.2.

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.....[9]

[Total: 20]

2 **(a)** **(i)** What is meant by the terms *low atmospheric pressure* and *high atmospheric pressure*?

low atmospheric pressure .....

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high atmospheric pressure .....

.....[2]

(ii) Explain how variations in atmospheric pressure at sea level will cause a horizontal movement of air across the Earth's surface.

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.....[2]

(iii) For **either** the northern hemisphere **or** the southern hemisphere, describe how the Earth's rotation will influence the horizontal direction in which air moves between areas of different atmospheric pressure.

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.....[2]

(b) Fig. 2.1 is a cross-section between two places, **X** and **Y**, showing the likely passage of weather events associated with a temperate cyclonic weather system.

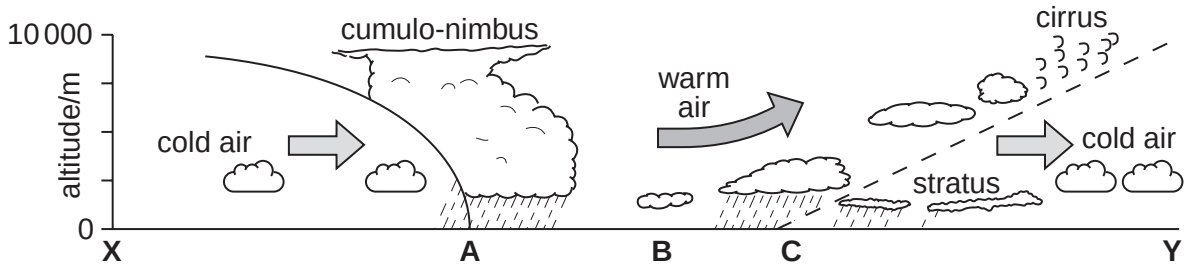

Fig. 2.1

Fig. 2.2 is a barometric chart of the temperate cyclonic system.

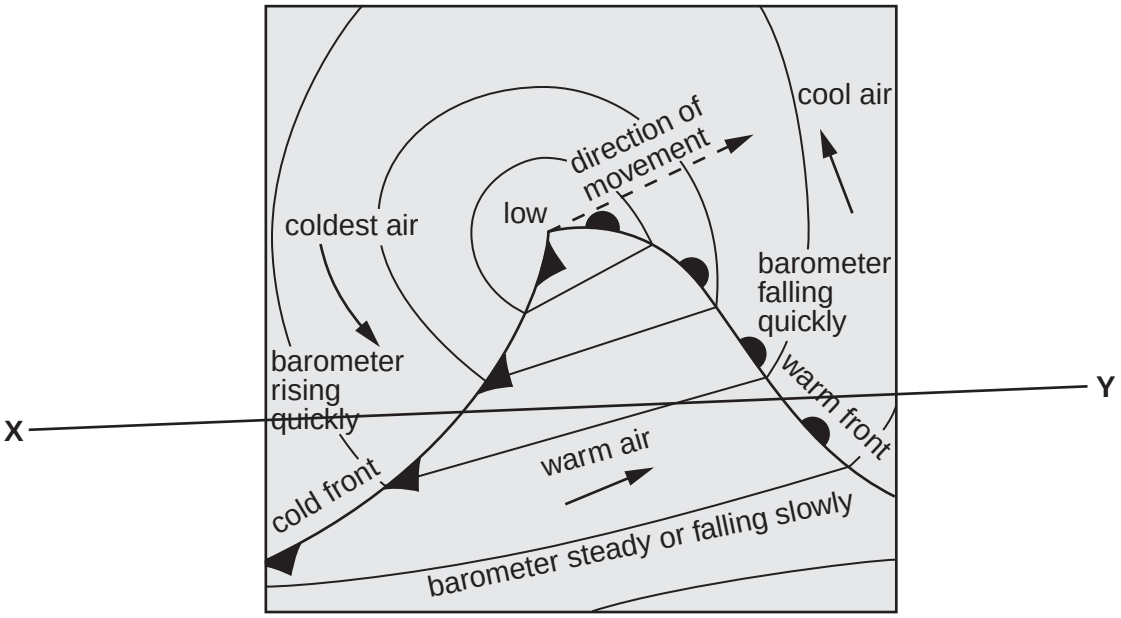

Fig. 2.2

(i) Mark the positions **A**, **B** and **C** from Fig. 2.1 onto their correct positions along line X–Y on the barometric chart (Fig. 2.2). [3]

(ii) Describe and explain the weather conditions occurring at points **A**, **B** and **C**.

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(iii) Explain why charts such as Fig. 2.2 are useful in making **short term** weather forecasts.

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(iv) Outline and justify **one** method that could be used to make reasonably accurate **long term** weather forecasts.

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..... [3]

[Total: 20]

Section B

Answer **one** question from this section.

Write your answers on the separate answer paper provided.

3 **(a)** Describe the trends in Primary Energy Consumption by Energy Source between 1970 and 2025 that are shown in Fig. 3.1. [10]

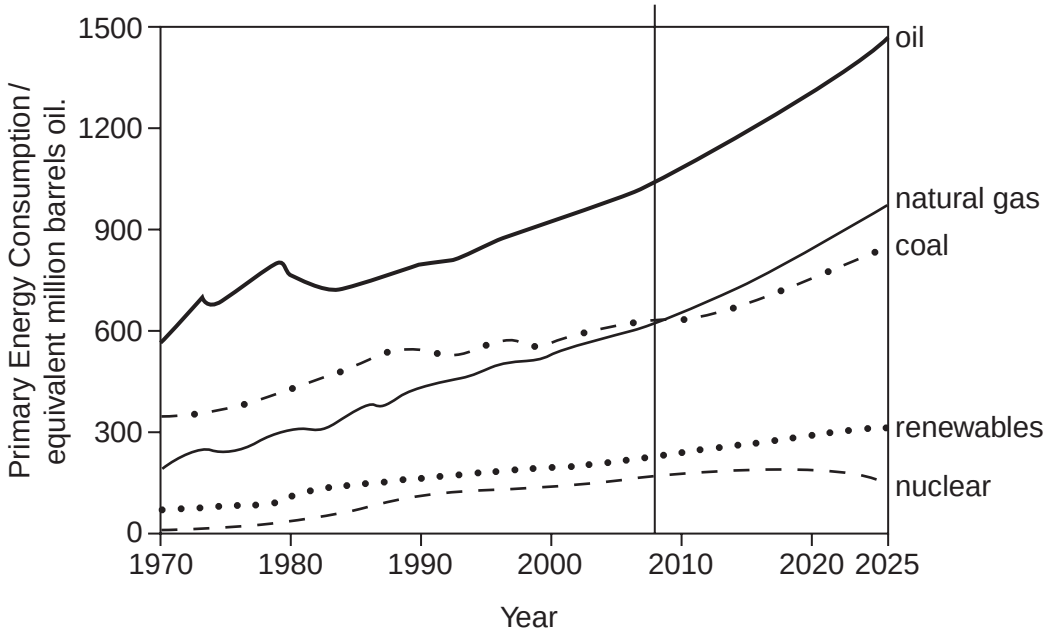

Fig. 3.1

(b) To what extent do developing countries find it more difficult than developed countries to conserve non-renewable resources? Illustrate your answer using examples you have studied. [30]

[Total: 40]

4 **(a)** Fig. 4.1 contains data on emissions of CO_2, per person and from the country as ... r selected countries in 1995.

Emissions of CO_2 for selected countries in 1995

Fig. 4.1

Outline **three** different ways in which CO_2 emissions per country compare or contrast with emissions per person for selected countries. [10]

(b) Outline the extent to which current trends in global warming are a product of human activity. Describe and explain the possible impact of global warming upon agricultural activity and human settlement. [30]

[Total: 40]

5 **(a)** Fig. 5.1 shows the pattern of the tsunamis generated by the Indonesian earthq... th December 2004. Explain how and why the impact of these tsunamis varied betwe... **A**, **B** and **C** on Fig. 5.1.

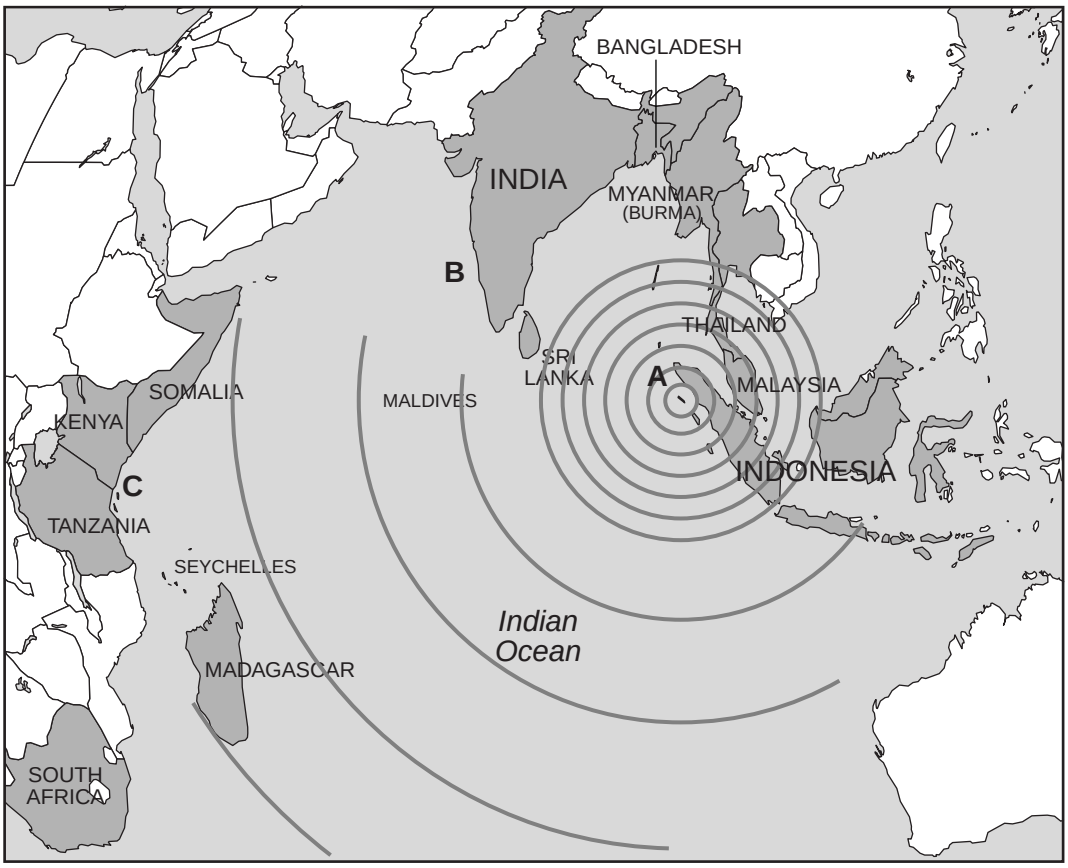

Fig. 5.1

(b) With reference to examples you have studied, describe and explain the measures that countries might adopt in order to reduce the damaging effects of volcanic eruptions and earthquakes. [30]

[Total: 40]

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