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

CANDIDATE NAME

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

3561130326

ENVIRONMENTAL MANAGEMENT **8291/11**

Paper 1 Lithosphere and Atmosphere **May/June 2012**

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 **10** printed pages and **2** blank pages.

Section A

For Examiner's Use

Answer **all** questions in this section.

Write your answers in the spaces provided.

1 **(a)** What is meant by the terms *chemical weathering* and *mechanical weathering* of rocks? For each state an example.

chemical weathering .....

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.....[2]

mechanical weathering .....

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.....[2]

(b) Fig. 1.1 shows a cross profile of a slope in which rock structure, weathering, coastal erosion and mass movements are important.

Fig. 1.1

(i) Explain how the rock structure shown at point **A** in Fig. 1.1 would assist the process of weathering to produce the large angular fragments seen at point **B**.

For Examiner's Use

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(ii) Describe and explain the distribution of larger debris on the slope in Fig. 1.1.

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(iii) Explain how erosion by the sea would help to maintain the instability of the whole of the slope in Fig. 1.1.

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.....[2]

[Turn over

(c) Table 1.1 shows the amount of soil loss recorded on slopes with different percentage areas of vegetation cover.

For Examiner's Use

Table 1.1

category of land use	soil loss per hectare/tonnes	range of slope angles	% of land use category covered by vegetation
forest	0.1	most slope angles	95
partly cleared forest	5.0	steep slopes	50
bare ground	18.0	most slope angles	5

(i) Use the information in Table 1.1 to describe and explain the relationship between the soil loss, vegetation cover and slope angle.

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(ii) Explain why minimising soil loss on sloping land is better achieved by measures that retain much of the original vegetation cover rather than extensive clearance followed by replanting.

For Examiner's Use

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[Total: 20]

[Turn over

2 **(a)** Some results obtained by a helium atmospheric research balloon are contained in Fig. 2.1.

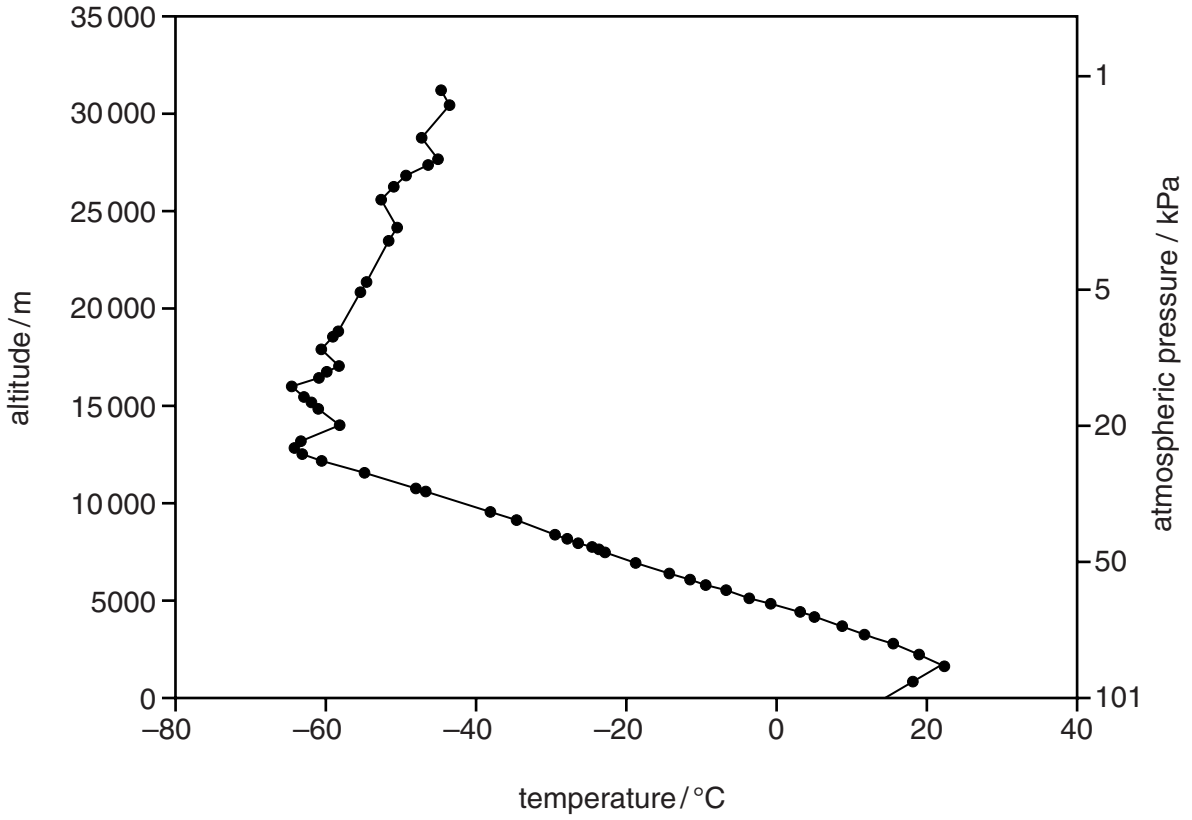

Fig. 2.1

(i) For each of the regions of the atmosphere listed below, write the appropriate letter shown in brackets onto Fig. 2.1.

- stratosphere (S)
- troposphere (T)
- tropopause (P)
- a temperature inversion below 10,000 m (I)
- the layer in which global warming occurs (G)
- the layer in which ozone depletion occurs (O) [6]

(ii) Explain the decrease in temperature that occurs between 2500 m and 13 000 m.

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(iii) Describe and give **one** reason for the decrease in atmospheric pressure shown in Fig. 2.1.

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(b) The following gases make a contribution to the depletion of the ozone layer and/or global warming: CFCs, carbon dioxide, nitrogen oxides (NO_x), methane and water vapour.

Complete Table 2.1 to show the contribution made by each gas. [4]

The first row has been completed for you.

Table 2.1

gases	global warming	ozone depletion
carbon dioxide	yes	no
methane		
nitrogen oxides		
CFCs		
water vapour		

(c) Explain **two** differences between the processes that lead to ozone depletion and global warming.

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.....[4]

[Total: 20]

Section B

Answer **one** question from this section.

3 **(a)** Fig. 3.1 shows the motion of a wind driven ocean wave and a tsunami.

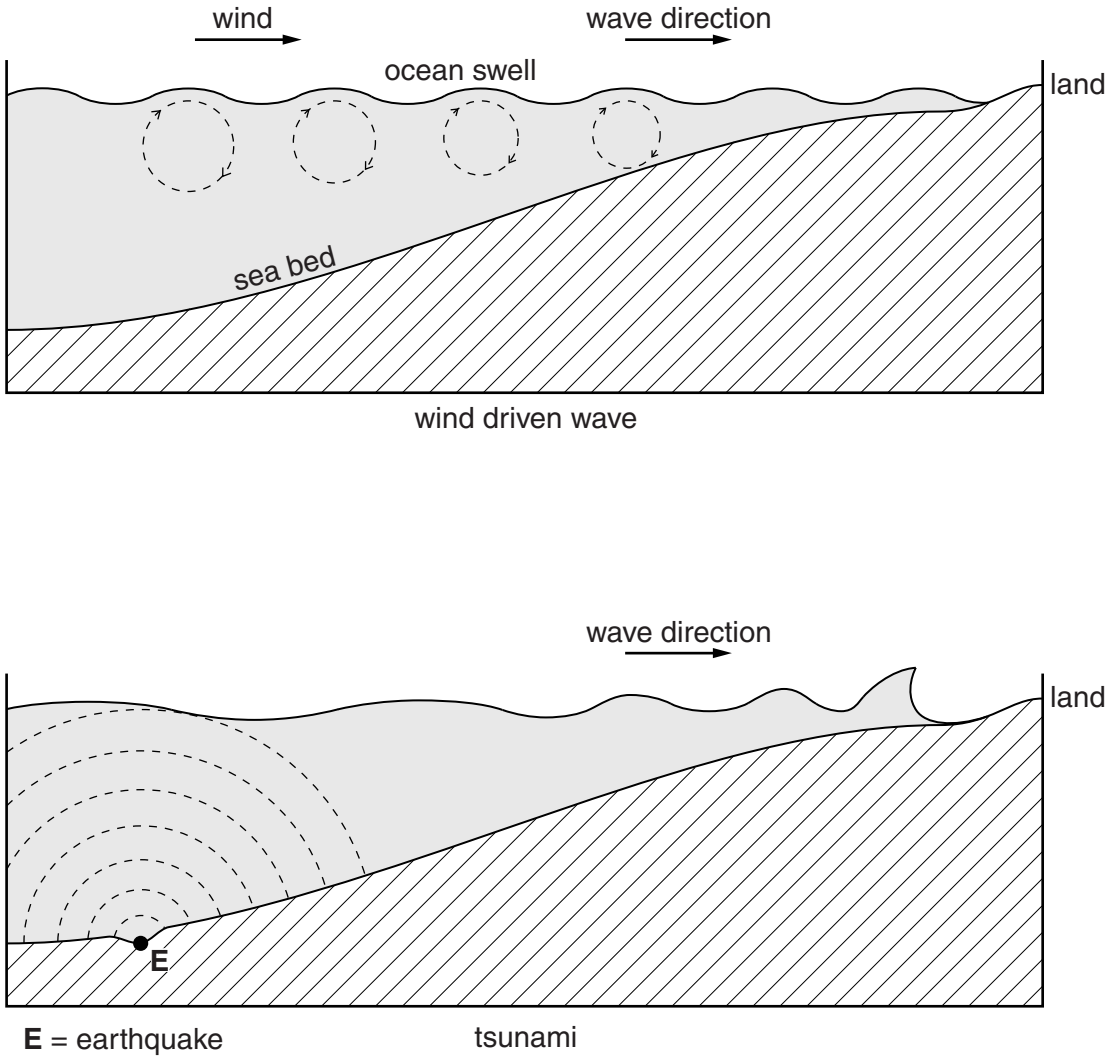

Fig. 3.1

Using the information in Fig. 3.1, briefly explain how the wave motion differs in the two cases. Explain why tsunamis are more devastating in their effects than normal wind driven waves. [10]

(b) Using recent examples with which you are familiar, describe and explain the effects that a powerful earthquake may have upon places both near and distant from its epicentre. Assess the measures that were adopted to reduce the effects of the examples you have chosen. [30]

[Total: 40]

4 **(a)** Briefly describe the distribution of deaths from urban air pollution (UAP) shown in Fig. 4.1. Suggest **two** reasons for this distribution. [10]

deaths from urban air pollution

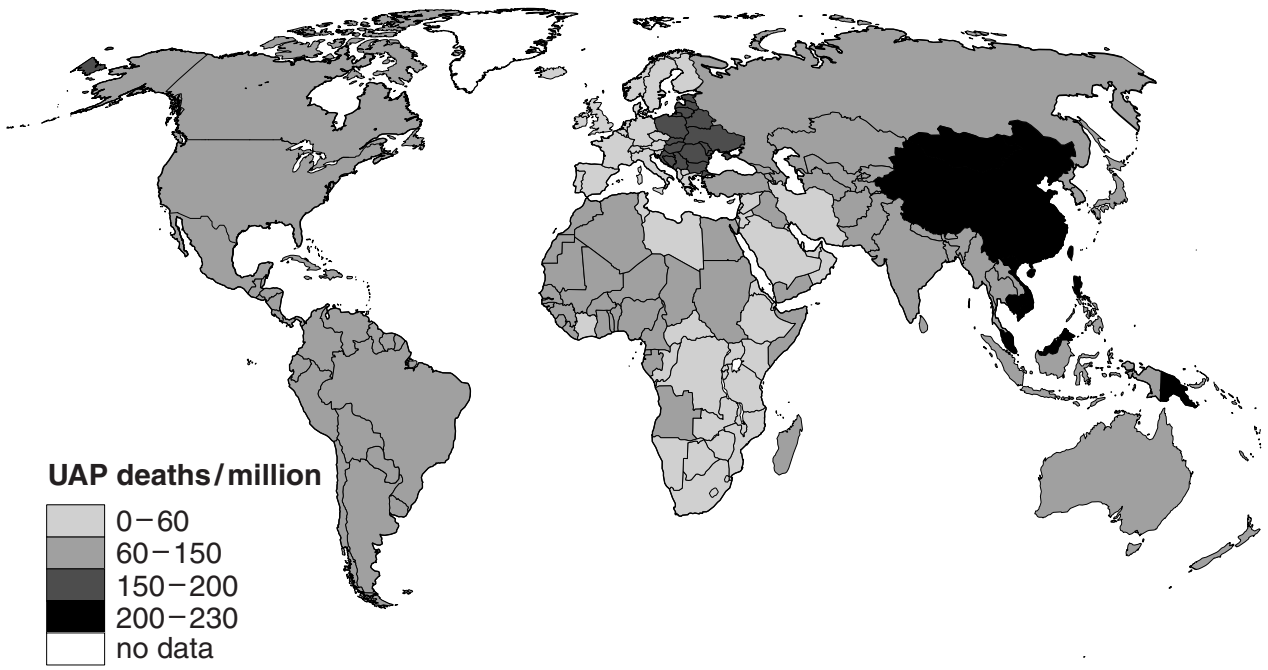

Fig. 4.1

(b) With reference to examples of urban areas with which you are familiar, evaluate the measures that are being used to reduce the volume and effects of urban air pollution. [30]

[Total: 40]

5 **(a)** Fig. 5.1 shows an interrelationship between resources, industrial output, population and pollution for the period 1900 to 2100.

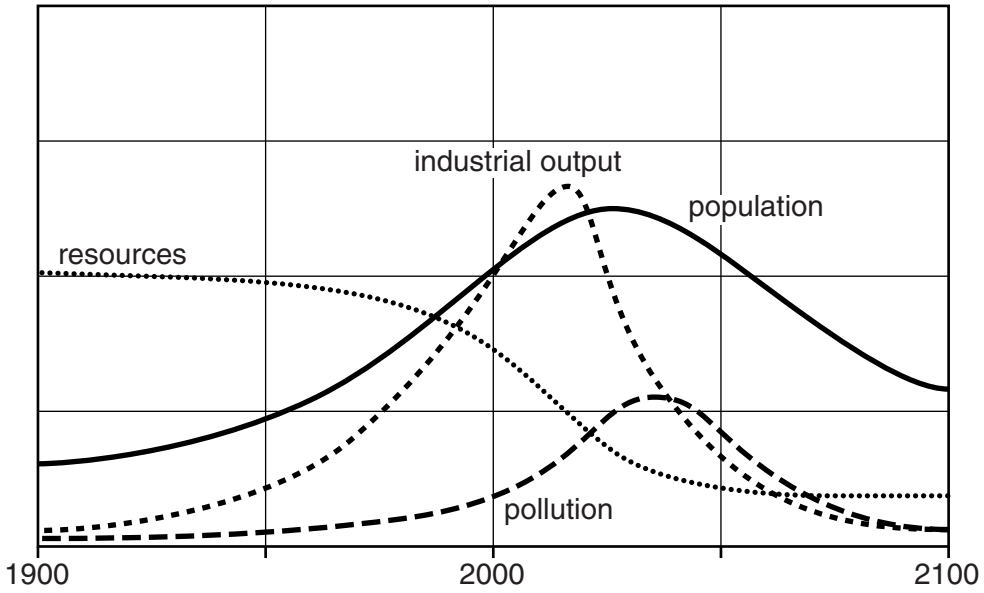

Fig. 5.1

Briefly describe how changes to the size of the world's population are related to the other components of the model. [10]

(b) To what extent are MEDCs more likely to meet the future resource needs of their populations than LEDCs? Your answer should include examples from each group of countries. [30]

[Total: 40]

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