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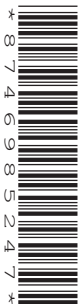
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ENVIRONMENTAL MANAGEMENT

8291/12

Paper 1 Lithosphere and Atmosphere

October/November 2014

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 an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO NOT WRITE IN ANY BARCODES.

Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

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.

Section A

Answer **all** questions in this section.

Write your answers in the spaces provided.

- 1 (a) The photograph in Fig. 1.1 shows a section of a chalk cliff which has recently collapsed.



Fig. 1.1

- (i) Name the type of mass movement that has occurred in Fig. 1.1.

.....[1]

- (ii) State **two** pieces of evidence from Fig. 1.1, which suggest that the mass movement has recently happened.

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.....[4]

(iii) Explain why the largest rock fragments shown in Fig. 1.1 have travelled furthest away from the cliff.

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.....[2]

(iv) Identify and explain **one** rock weathering process that might operate on the newly exposed sections of cliff face shown in Fig. 1.1.

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.....[3]

(b) Fig. 1.2 identifies a number of factors which contribute to slope instability and mass movement.

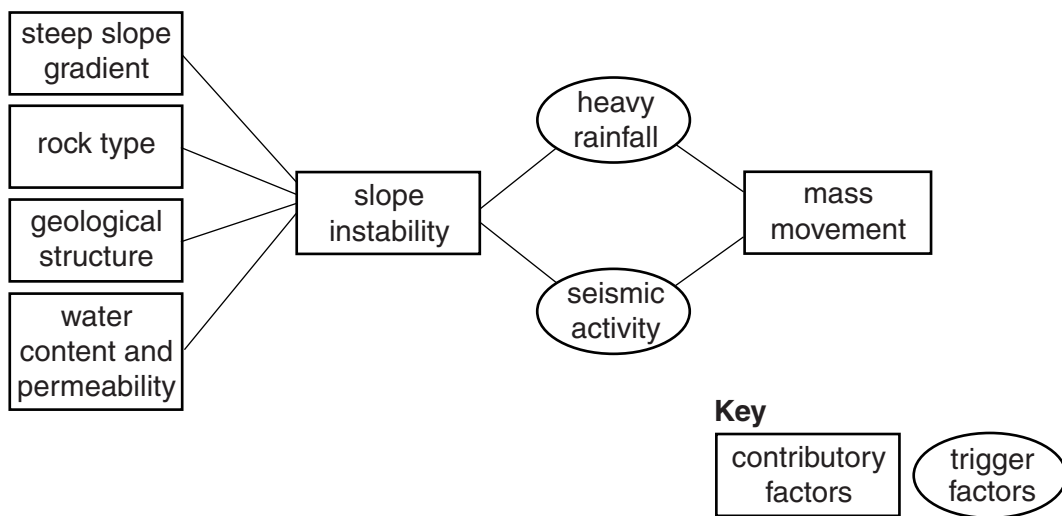


Fig. 1.2

(i) Fig. 1.2 does not include the effects of human activity. Outline **two** ways in which human activities can contribute to slope instability.

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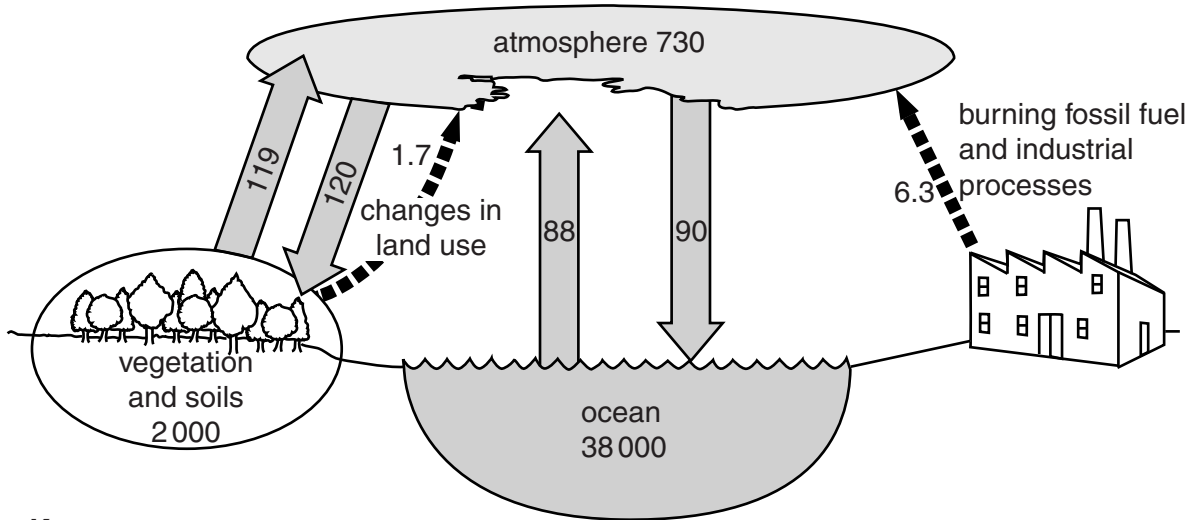
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.....[4]

- 2 (a) Fig. 2.1 shows the annual exchanges of carbon dioxide between the Earth's surface and the atmosphere. The figures refer to billion tonnes of carbon.



Key

carbon flow indicated by arrows



natural flow



flow due to human activities

Fig. 2.1

- (i) Describe the pattern of natural flows of carbon dioxide between the atmosphere and the Earth's surface shown in Fig. 2.1.

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.....[2]

- (ii) According to Fig. 2.1, how much carbon (in billion tonnes) does human activity contribute to the atmosphere?

.....[1]

(iii) Describe and explain **two** ways that changes in land use might result in an increase in carbon dioxide in the atmosphere.

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(iv) Briefly describe the effect that burning fossil fuels has on global climate.

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(b) Fig. 2.2 shows carbon dioxide emissions in different regions of the world. The shading indicates carbon dioxide emissions per person and the size of each circle reflects the population of each region.

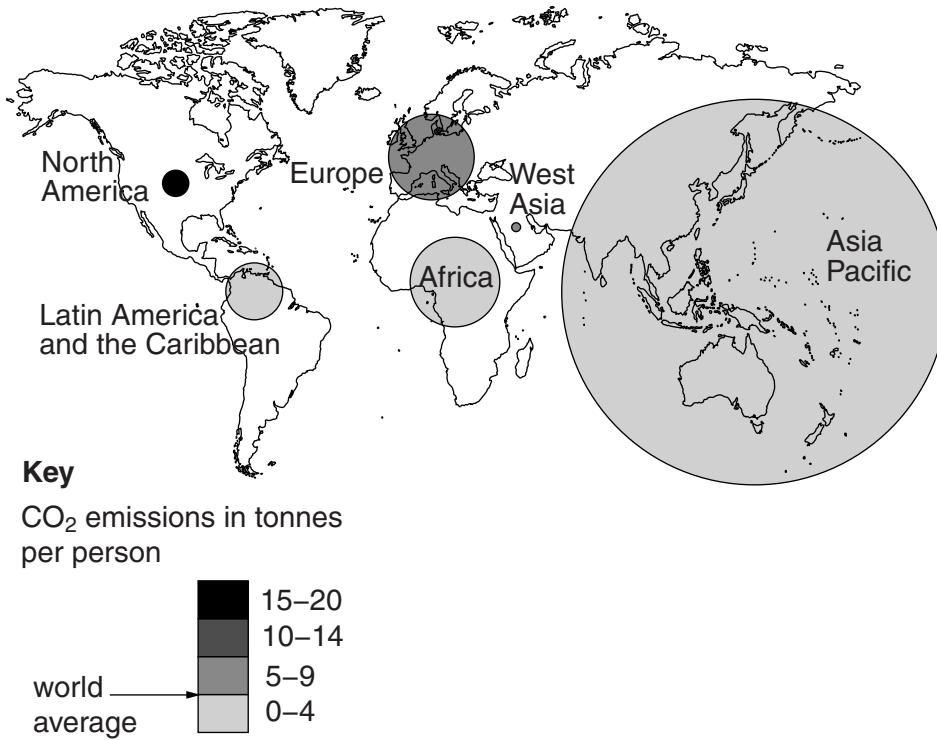


Fig. 2.2

(i) With reference to the information in Fig. 2.2, describe and briefly explain the differences between the pattern of carbon dioxide emissions from Europe and Asia Pacific.

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(ii) Suggest **three** reasons why Africa's per person carbon dioxide emissions might be expected to grow faster than Europe's in the future.

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.....[6]

[Total: 20]

Section B

Answer **one** question from this section.

- 3 Fig. 3.1 shows information on earthquake risk along the 2000 km line where the Indian Plate slides beneath the Himalayan Mountains. The dates and locations of major historic earthquakes are shown together with urban population data.

The length of bars on Fig. 3.1 show the potential magnitude of future earthquakes.

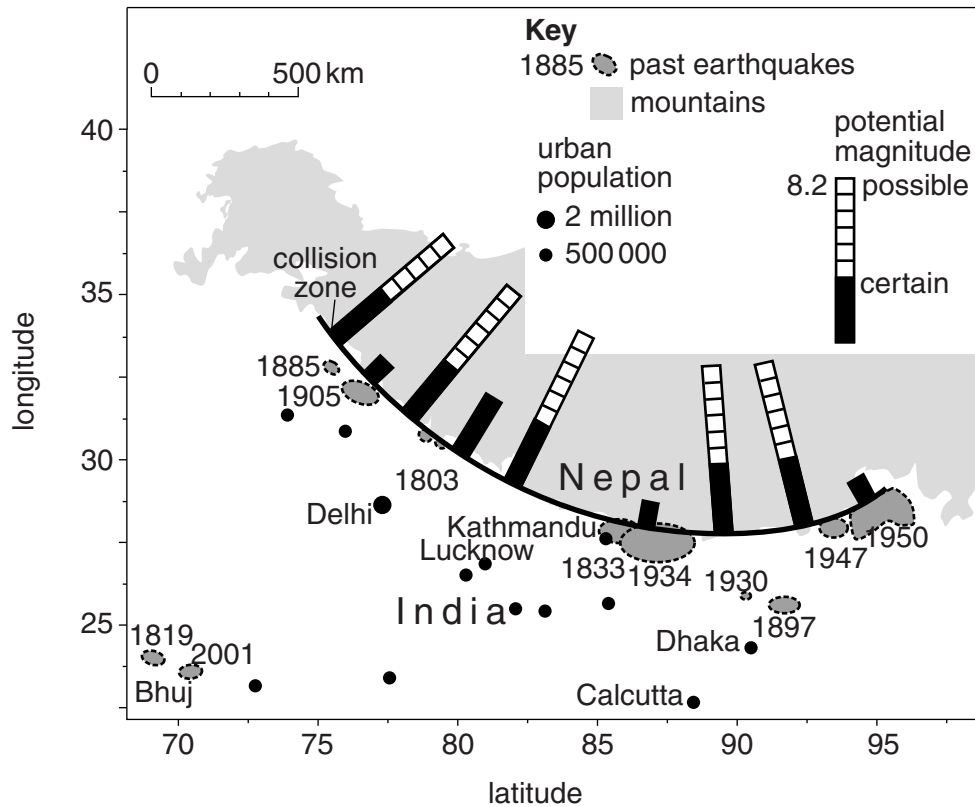


Fig. 3.1

- (a) Outline **two** ways in which the information in Fig. 3.1 would assist governments in this region in planning their response to future earthquake events. [10]
- (b) Using evidence of recent earthquake and volcanic events with which you are familiar, assess the extent to which loss of life and damage to property are related to a country's level of development. Your answer should contain examples of both LEDCs and MEDCs. [30]

[Total: 40]

- 4 Table 4.1 shows the number of years it will take for the population of urban areas to double in different continents.

Table 4.1

area	doubling time/years
Africa	22
Asia	32
Latin America and the Caribbean	48
North America	77
Europe	450
world	38

- (a) With reference to the data in Table 4.1, suggest reasons for the difference between Europe and other parts of the world. [10]
- (b) Urban expansion places considerable pressure on the resources of the lithosphere. With reference to examples from both LEDCs and MEDCs, evaluate the success of strategies to manage these resources more sustainably for future generations. [30]

[Total: 40]

5 Fig. 5.1 shows the Earth's solar energy budget.

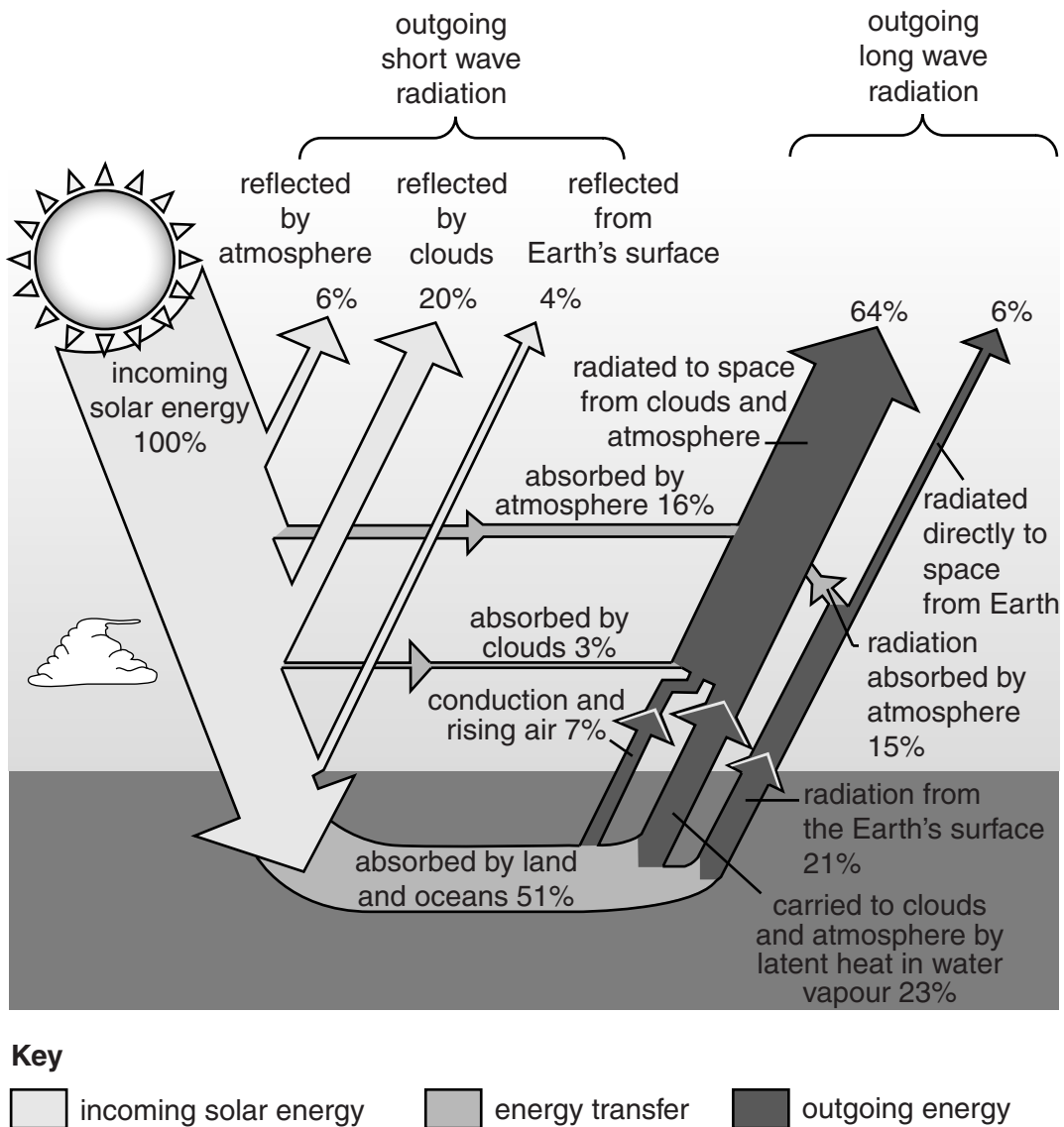


Fig. 5.1

- (a) With reference to Fig. 5.1, describe how a balance between incoming and outgoing radiation occurs. [10]
- (b) To what extent can the development of alternative sources of energy reduce the damaging effects of atmospheric pollution? [30]

[Total: 40]

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 Figure 1.2 © Keith Metcalfe; Geoactive no. 413; Nelson Thornes; 2009.
 Figure 2.1 © <http://greenhousegasemissions.com/levels-of-greenhouse-gas-emissions/>; IPCC; 2001.
 Figure 2.2 © http://www.grida.no/graphicslib/detail/per-capita-co2-emissions-at-the-regional-level-in-2003_151b.
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