UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME	

CENTRE NUMBER						CANDIDATE NUMBER					

ENVIRONMENTAL MANAGEMENT **5014/11**

Paper 1 **October/November 2010**

2 hours 15 minutes

Candidates answer on the Question Paper.

Additional Materials: Ruler
Protractor

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 or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
All questions in Section A carry 10 marks.
Both questions in Section B carry 40 marks.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use	
1	
2	
3	
4	
5	
6	
Total	

This document consists of **24** printed pages.

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UNIVERSITY of CAMBRIDGE International Examinations

Section A

For Examiner's Use

1 **(a)** Look at the photograph, which shows part of the largest copper mine in the world, located in the Rocky Mountains, USA.

(i) Use evidence from the photograph to describe the mining method shown.

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..... [4]

For Examiner's Use

(ii) The ore from the mine contains only 1% copper. What problems will result from this?

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(b) What do you think should be done with such a large hole after mining has finished? Give reasons for your answer.

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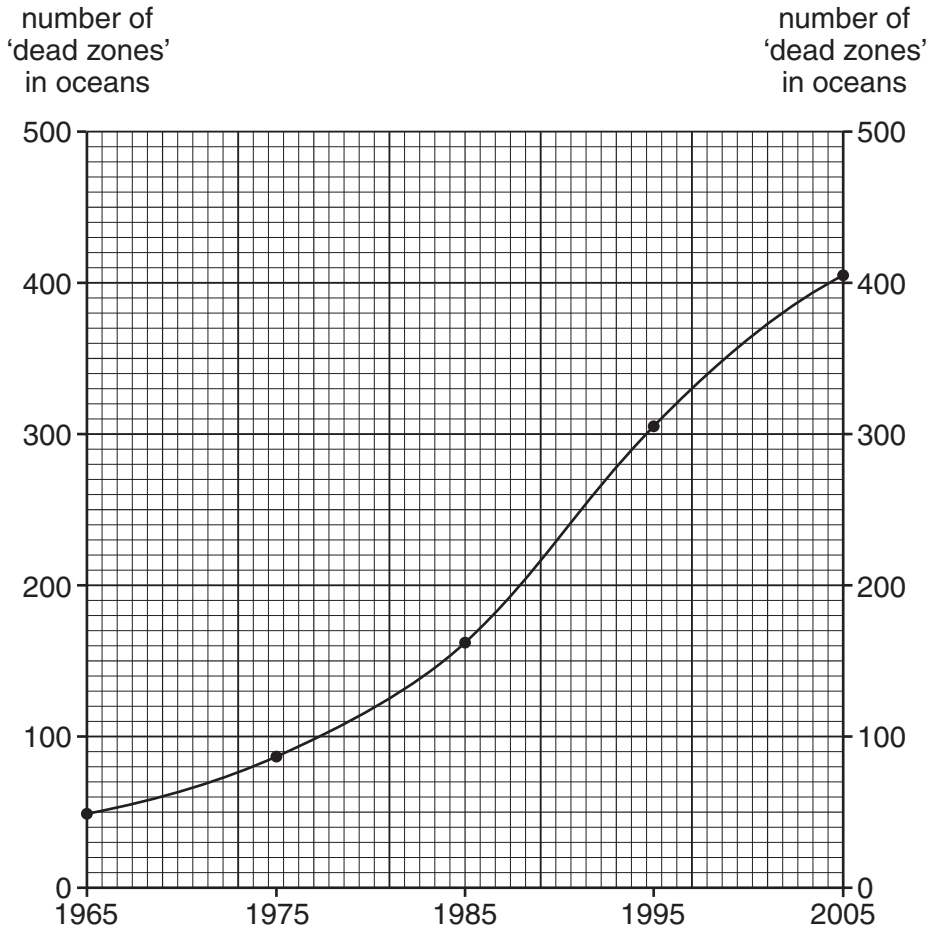
..... [3]

For Examiner's Use

2 **(a)** Look at the graph showing changes in the number of 'dead zones' in the oceans. A 'dead zone' is found in very shallow, coastal waters. These areas used to have healthy ecosystems, but not much life can now survive in them.



(i) How many dead zones were known in 1965 and 2005?

1965 ..... 2005 ..... [2]

(ii) Which ten-year period had the largest increase in 'dead zones'?

..... [1]

For Examiner's Use

(b) **(i)** Name **two** heavy metals.

..... [1]

(ii) Explain how heavy metals and plastics can cause the death of marine animals.

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..... [3]

(c) Why is it difficult to prevent the formation of 'dead zones'?

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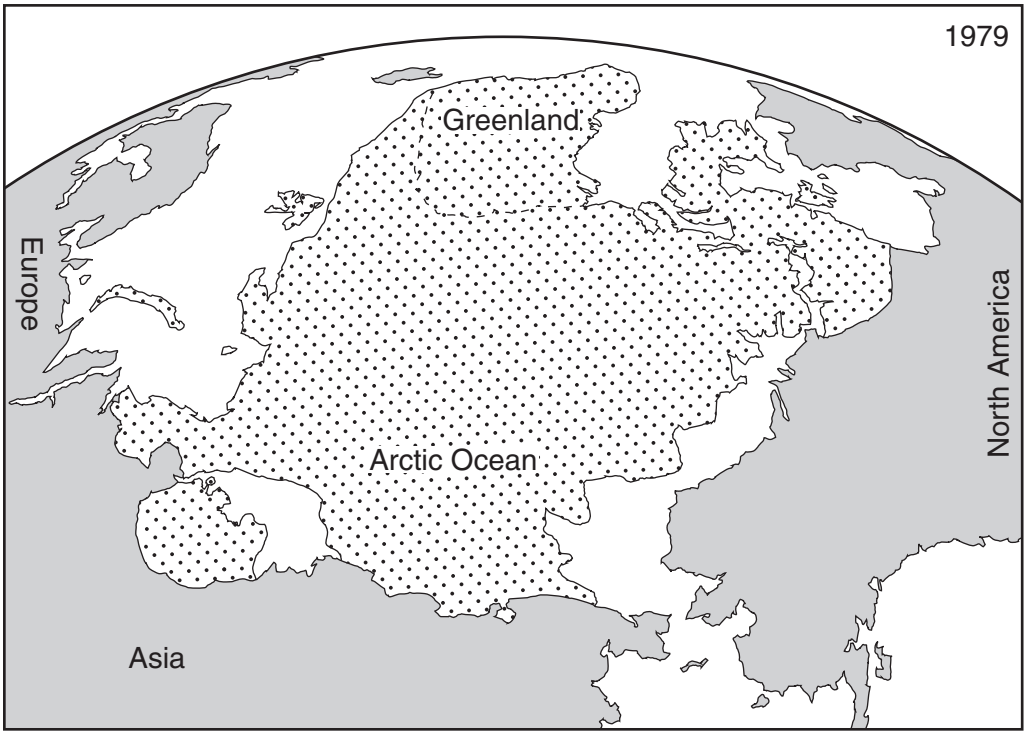
..... [3]

3 Look at the maps showing the extent of ice cover north of the tundra zone in September 1979 and September 2007.

For Examiner's Use

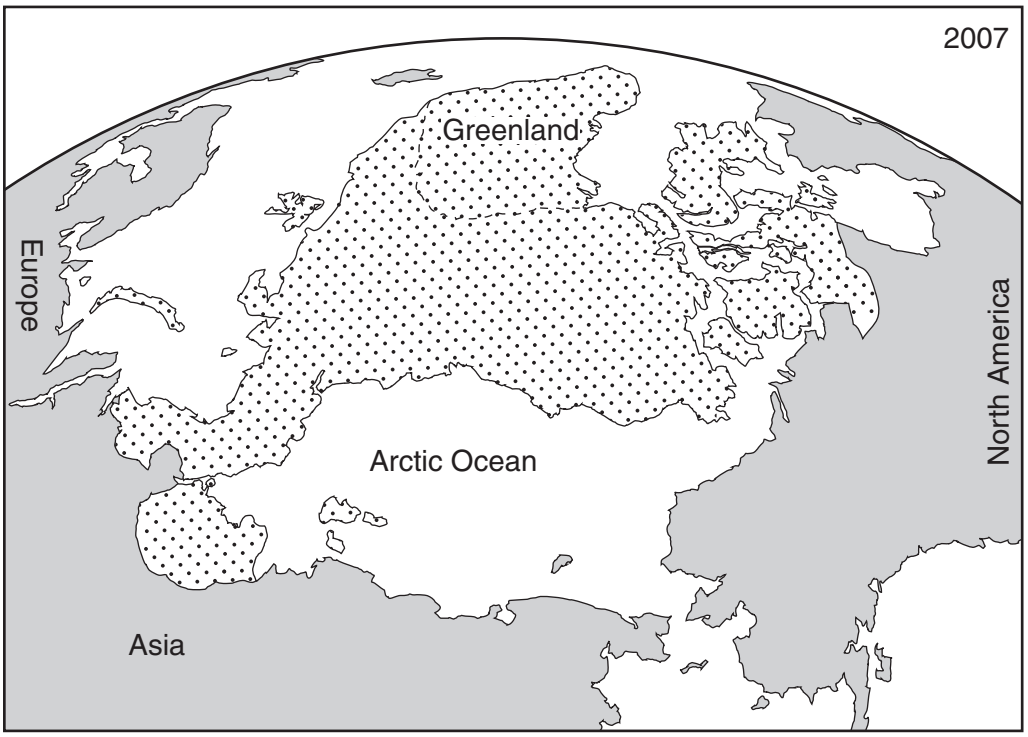


key

ice

sea water

land not covered by ice



For Examiner's Use

(a) **(i)** Describe **one** main similarity and **one** main difference in the extent of the ice cover in 2007 compared with 1979.

similarity .....

difference ..... [2]

(ii) On the 2007 map write '**T**' to show a land area with a tundra climate. [1]

(b) Describe and explain:

(i) the effect of snow and ice on the incoming rays from the Sun,

.....

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..... [2]

(ii) why insolation is low in high latitudes.

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..... [2]

(c) Can the changes in ice cover shown on the maps be linked to climate change?
You should give reasons for agreeing or disagreeing, or both.

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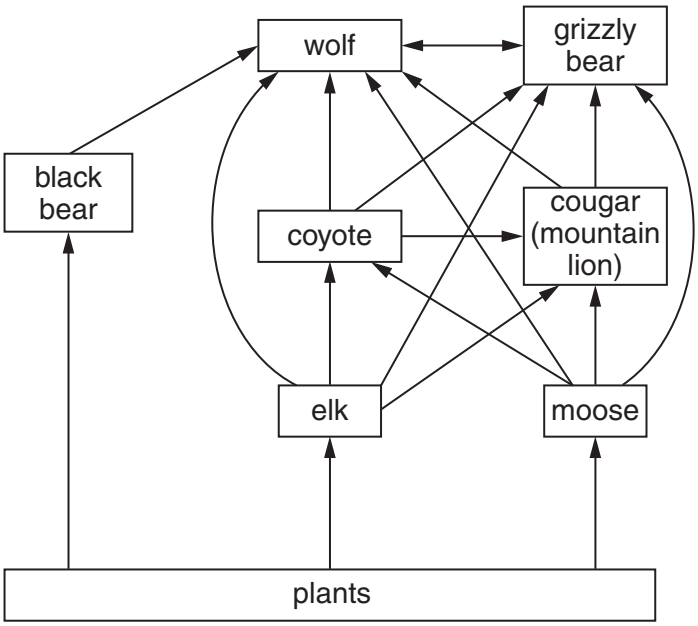
..... [3]

For Examiner's Use

4 **(a)** Look at the diagram, which shows part of the food web in Yellowstone National Park, USA.



Many wolves once lived in Yellowstone National Park but there were none living there by the 1970s. Wolves from Canada have recently been released in the area.

(i) What is likely to happen to the wolf population over time?

..... [1]

(ii) Which animal can help to control the population of wolves?

..... [1]

(iii) How many feeding (trophic) levels are shown?

..... [1]

(iv) Use an example from the food web diagram to explain the meaning of the following terms:

predator .....

.....

competition .....

.....

producer .....

.....

food chain .....

..... [4]

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(b) Fires which start naturally in Yellowstone National Park are allowed to burn.

Explain the likely effects of this policy on animals in any ecosystem.

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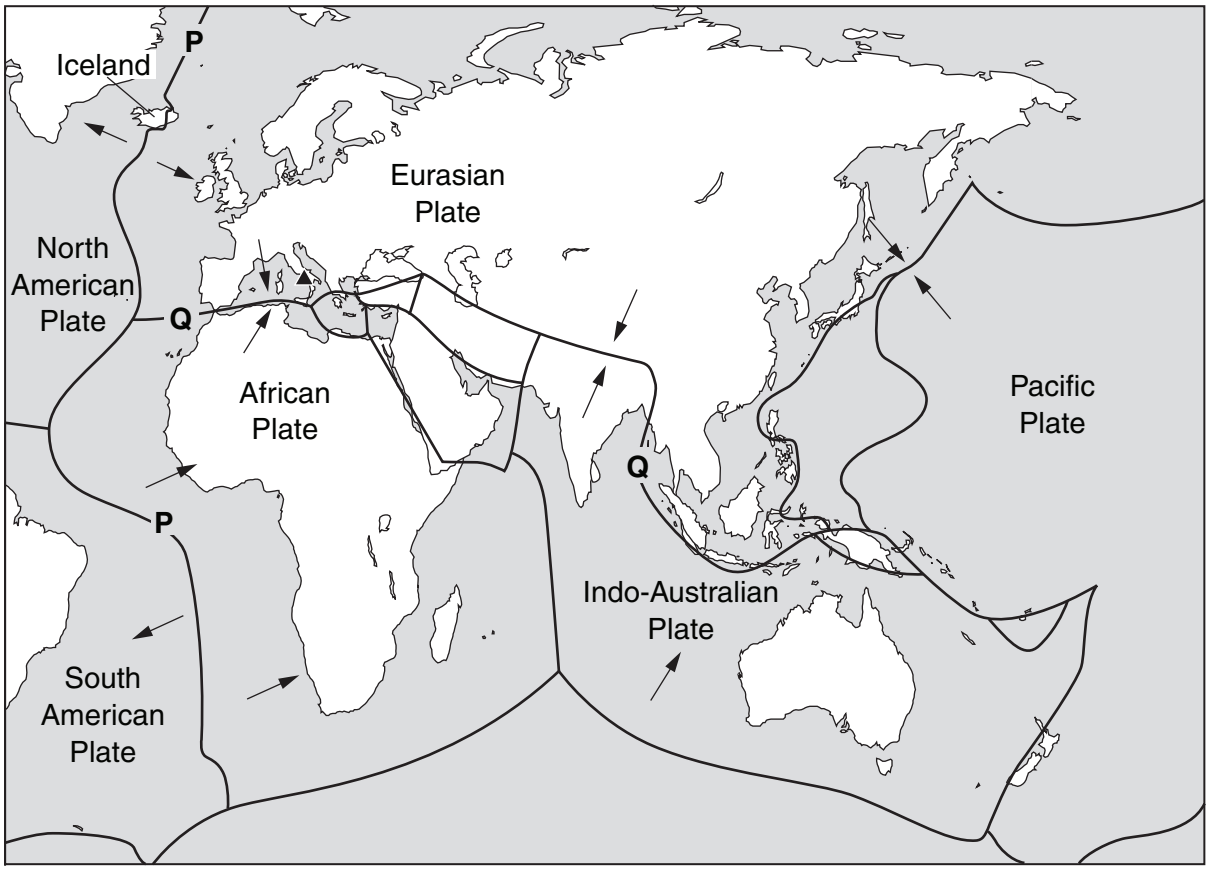
..... [3]

For Examiner's Use

Section B

For Examiner's Use

5 **(a)** Look at the map which shows major plate boundaries in Europe, Africa and Asia.



Key:

—— Plate boundaries

◄— Direction of plate movement

▲ Volcano Vesuvius

(i) State the direction of plate movement along the boundary marked **P**.

..... [1]

(ii) Name the type of plate boundary at **P**.

..... [1]

(iii) Volcanic eruptions are frequent in Iceland. Explain why.

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..... [2]

For Examiner's Use

(iv) A high percentage of Iceland's energy needs come from renewable alternative sources. Describe how volcanic activity can be harnessed for electric power and heating.

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..... [3]

(v) The earthquake risk is high in countries located along plate boundary **Q**. Explain why earthquakes often occur along plate boundaries of this type.

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..... [4]

For Examiner's Use

(b) Governments of countries with a high earthquake risk can prepare for future earthquakes.

Describe strategies they can use that will help to

(i) stop buildings from collapsing in an earthquake,

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(ii) reduce the number of deaths after the earthquake.

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[5]

For Examiner's Use

(c) Look at the table which shows strong earthquakes along plate boundary **Q** during the nine years between 2000 and 2008.

Strong earthquakes above 6.0 on the Richter Scale along plate boundary Q (2000–2008)

Date		Richter scale	Location	Estimated deaths
2000	–			
2001	January	7.9	Gujarat, India	20,000
2002	–			
2003	May	7.0	Algeria	2,000
	December	6.5	Bam, Iran	30,000
2004	December	8.9	Off the coast of Indonesia	250,000
2005	February	6.4	Kerman, Iran	300
	March	8.7	Off the coast of Indonesia	1,300
	October	7.6	Northern Pakistan and Kashmir	79,000
2006	April	6.0	Western Iran	70
	May	6.2	Yogyakarta, Indonesia	5,000
2007	–			
2008	October	6.5	Baluchistan, Pakistan	300

(i) 'Estimated deaths' is the heading for the last column in the table. Why is this used instead of just 'Deaths'?

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.....

..... [2]

(ii) Name the **two** countries with the largest number of strong earthquakes during these nine years.

..... [1]

(iii) Describe the pattern of strong earthquakes during the nine years shown in the table.

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..... [2]

For Examiner's Use

(iv) What does the information in the table suggest about the chances of people predicting when and where earthquakes will occur along plate boundary **Q**?

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..... [2]

(v) 'The stronger the earthquake, the greater the number of deaths.' Describe evidence in the table **for** and **against** this statement.

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..... [4]

(vi) In your view, how strong is the evidence **for** this statement? Explain your answer.

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..... [2]

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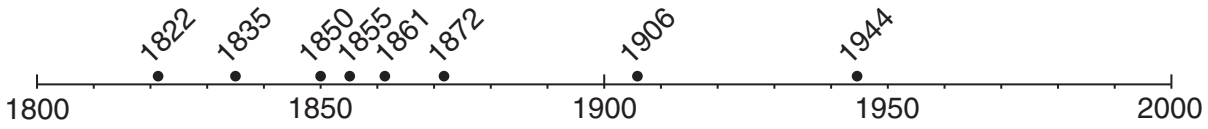
(d) Look at the timeline showing dates of major eruptions of the volcano Vesuvius in southern Italy.



• eruption and date

(i) Describe differences in the pattern of eruptions between the nineteenth (1800–1900) and twentieth centuries (1900–2000).

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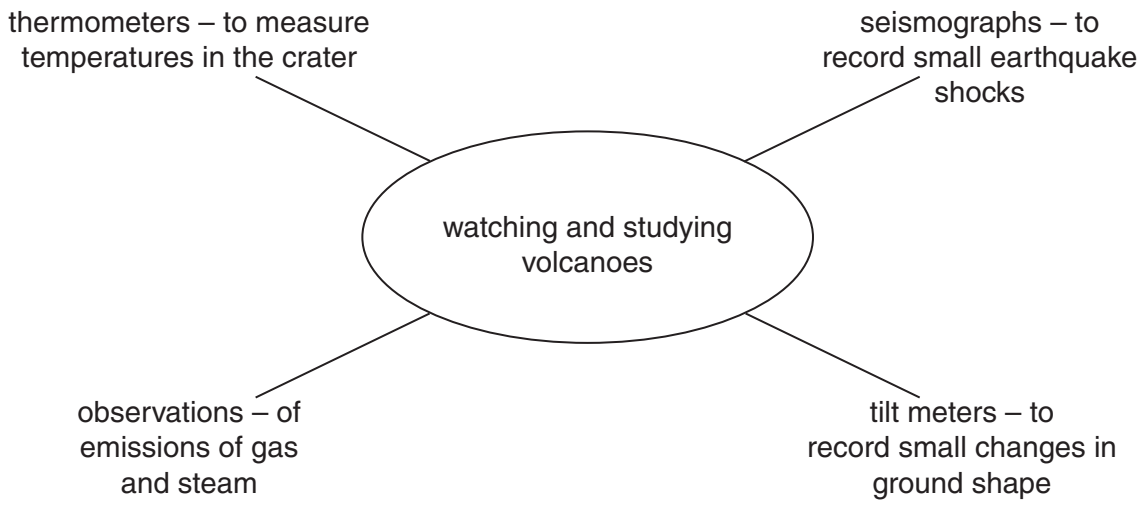
..... [2]

(ii) More than half a million people live in the area around Vesuvius. It is the most densely populated part of southern Italy.
State the most likely reason why so many people live near this volcano.

..... [1]

For Examiner's Use

(iii) Scientists keep a close watch on Vesuvius in the hope of predicting the next eruption and warning people before it happens. Four ways scientists watch and study volcanoes are given in the spider diagram below.



Describe how these ways are useful for predicting the next volcanic eruption.

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..... [3]

(iv) Suggest why the scientists might not always make correct predictions about volcanic eruptions.

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For Examiner's Use

(v) When scientists predict that Vesuvius is about to erupt again, more than half a million people will need to be evacuated from their homes. How easy or difficult will it be to put this strategy into action? Answer as fully as you can.

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..... [3]

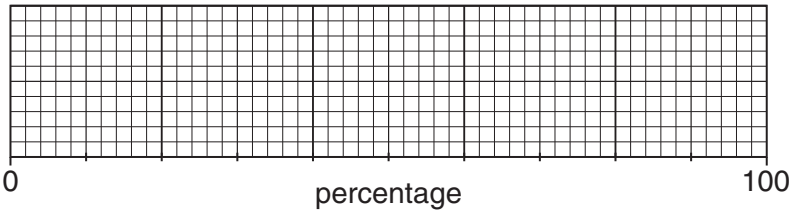
[Total: 40 marks]

For Examiner's Use

6 **(a)** The table below shows the composition of the lower atmosphere.

gas	percentage
nitrogen	78%
oxygen	21%
other gases	1%

(i) In the frame below, draw a divided bar graph to show these percentages and complete the key.



key:

☐ nitrogen

☐ oxygen

☐ other gases

[3]

(ii) Among the other gases are water vapour, carbon dioxide and ozone.
Explain the importance of each of these gases for life on Earth.

Water vapour .....

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Carbon dioxide .....

.....

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Ozone .....

..... [6]

(iii) How is the **natural** balance of the gases, nitrogen, oxygen and carbon dioxide, maintained in the atmosphere?

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..... [3]

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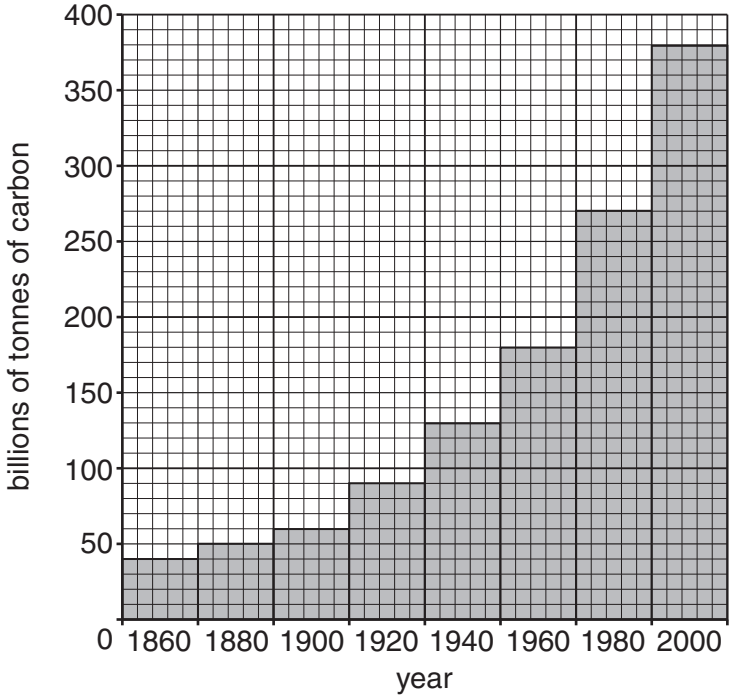
(b) Some human actions are disrupting this natural balance.

The graph below shows total world carbon emissions since 1860.



(i) On the graph, draw a summary line to show the change between 1860 and 2000. [1]

(ii) Describe the trends shown before and after 1960 and quote values to support your answer.

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..... [3]

(iii) Explain why many people believe that increased emissions of carbon dioxide are causing global warming.

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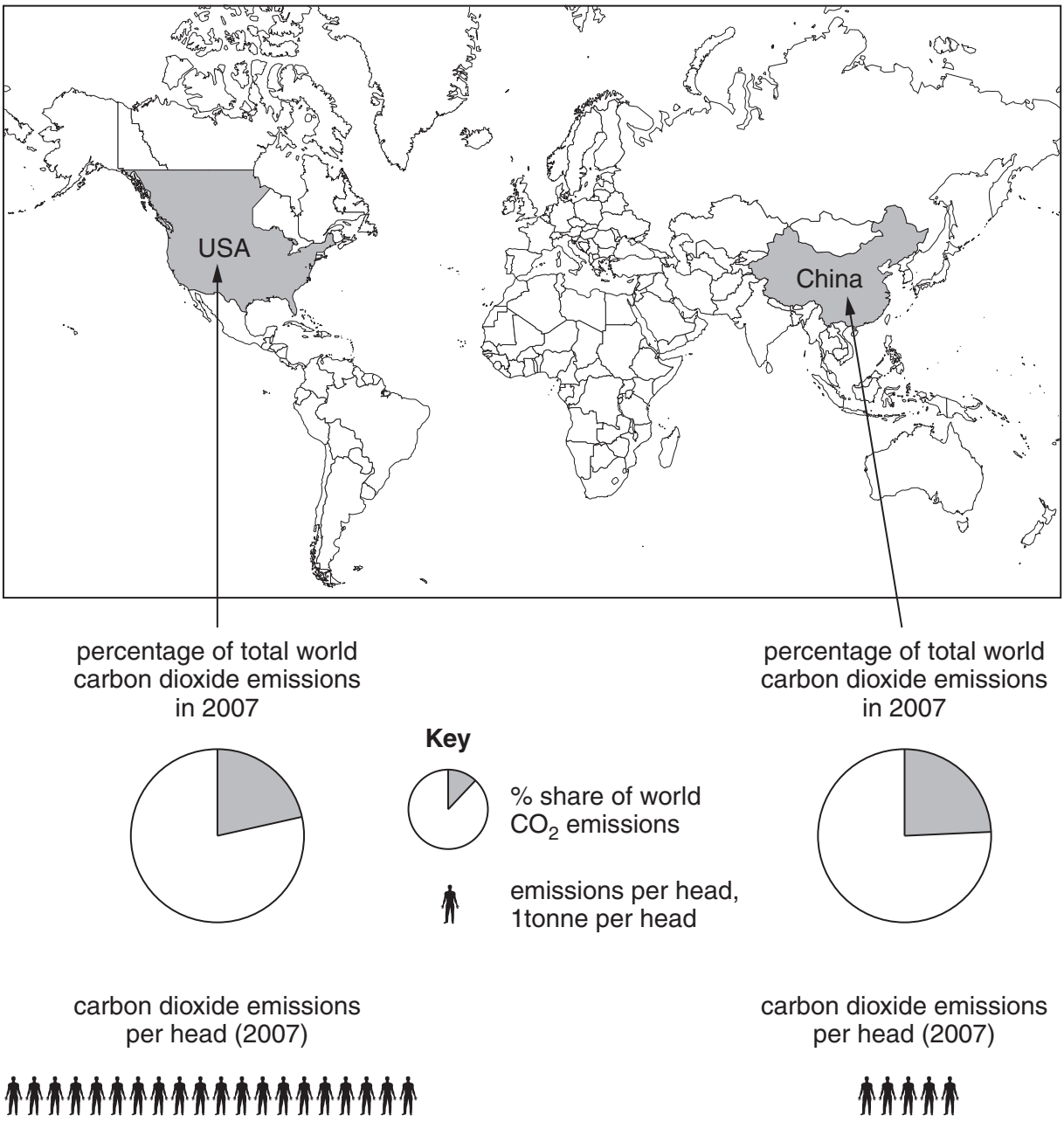
..... [3]

For Examiner's Use

(c) Information about the two countries in the world with the greatest carbon dioxide emissions in 2007 is given below.



(i) Describe what the information above shows about the share of total world emissions from these two countries.

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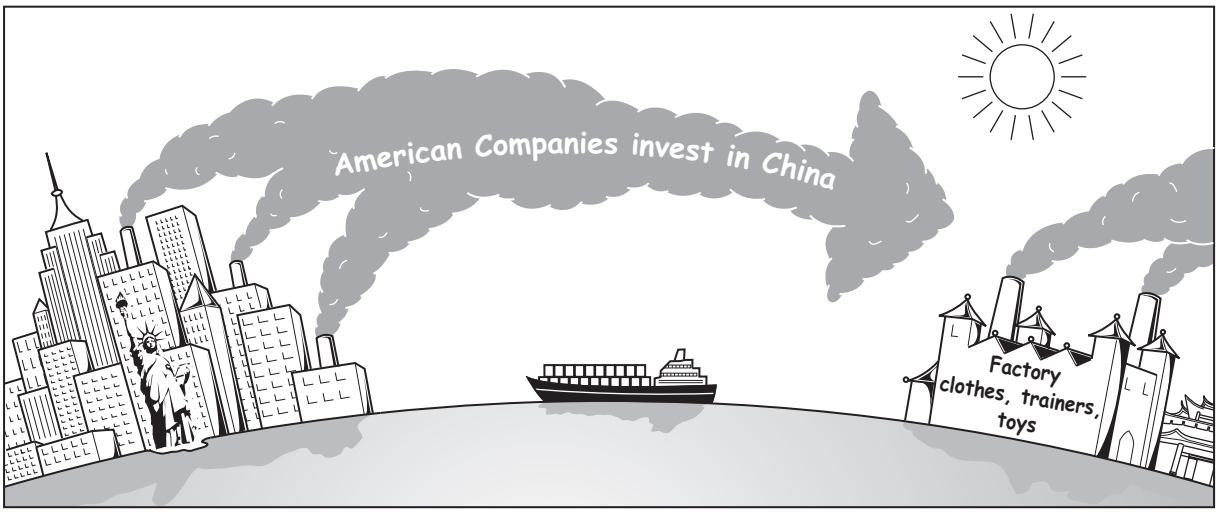
..... [3]

For Examiner's Use

(ii) The cartoon below is trying to explain why carbon dioxide emissions are increasing so fast in China.



Explain what the cartoon shows about the reasons for carbon dioxide emissions increasing in China.

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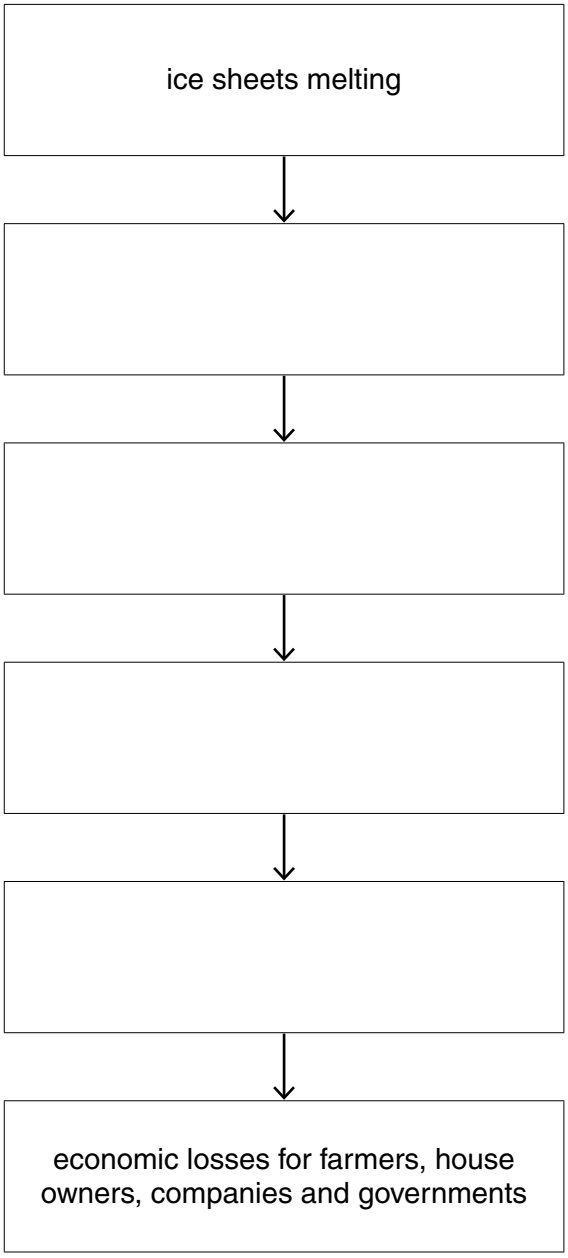
..... [3]

(d) When complete, the flow diagram below will show the worldwide effects of global warming.

For Examiner's Use

worldwide effects of global warming



Fill in the boxes by choosing the best comment for each box from the list below.

* sea defences breached
* previously populated areas abandoned
* rising sea levels
* flooding of low lying coastal areas such as deltas

[3]

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(e) In November 2008 the new President in the Maldives said that he intended to set up a wealth fund from tourist income. This fund would be used to buy land in another country where his people could move, should global warming be worse than expected.
Global sea levels are expected to rise 25–58 cm by 2100.

Read the information about the Maldives.

The Maldives	
Population	• 380,000 • capital city Malé 100,000
Geography	• coral islands in the middle of the Indian Ocean • about 1200 islands, of which about 250 are populated • highest point 2.4 m above sea level; average 1.5 m
Economy	• main income from tourism with about 500,000 visitors a year • average income about US$ 4,600 per head

(i) Explain why the President of the Maldives is more worried than leaders in most other countries about possible threats from global warming.

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.....

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..... [2]

(ii) The President of the Maldives said 'We can do nothing to stop climate change on our own.'
How true is this statement? Explain your answer.

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..... [2]

(iii) The President plans to buy land in another country for his people to go to if sea levels rise. Describe one likely problem with this plan.

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..... [2]

For Examiner's Use

(f) Read the information below.

2008 – a bad year for climatic hazards

- millions face drought in Ethiopia
- 11 million affected by monsoon floods in India
- 128,000 killed by a cyclone that struck Myanmar (Burma)

A … 'I blame climate change for all these disasters'

B … 'these are just normal climate events'

C … 'large numbers are affected because of poverty'

(i) Explain the viewpoints of persons **B** and **C**.

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..... [4]

(ii) How far do you agree with person **A**? Explain your answer.

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..... [2]

[Total: 40 marks]

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