UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

1855116789

ENVIRONMENTAL MANAGEMENT **0680/21**

Paper 2 **October/November 2010**

1 hour 45 minutes

Candidates answer on the Question Paper.

Additional Materials: Ruler

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 **both** questions.

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.

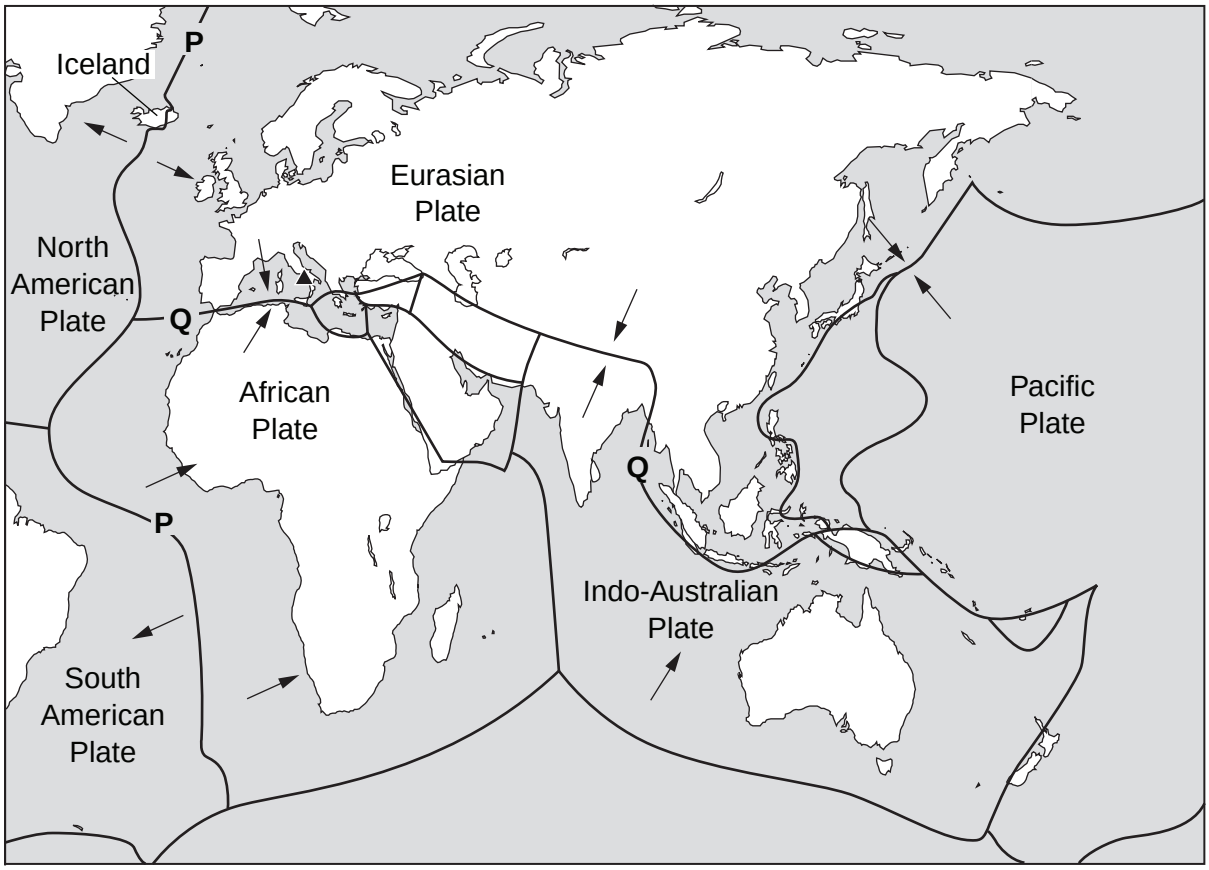
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1 **(a)** Look at the map which shows major plate boundaries in Europe, Africa and Asia.

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

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

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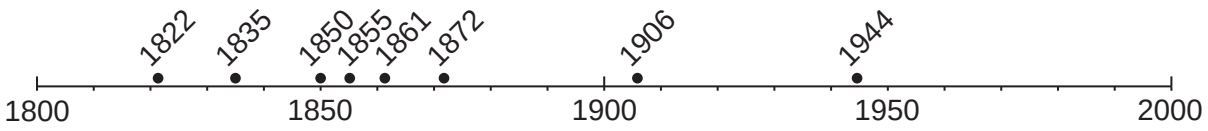
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(d) Look at the timeline showing dates of major eruptions of the volcano Vesuvius in southern Italy.

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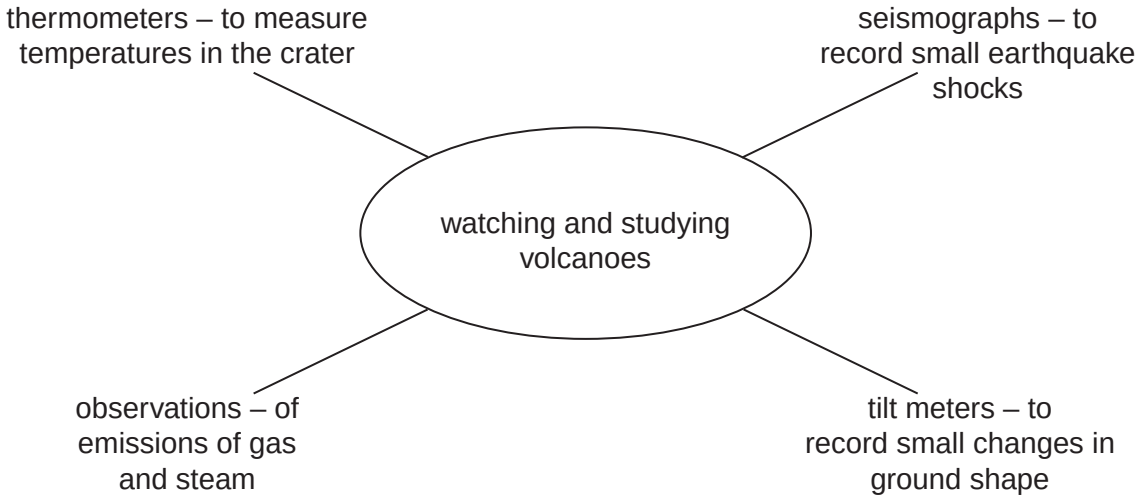
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(ii) More than half a million people live in the area around Vesuvius. It is the most densely populated part of southern Italy.
State the most likely reason why so many people live near this volcano.

..... [1]

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

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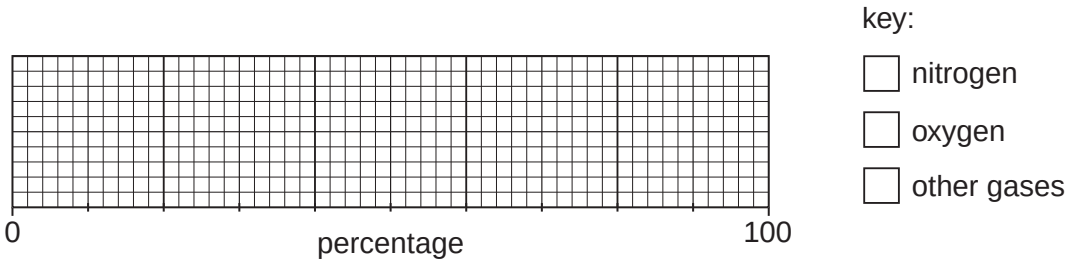
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2 **(a)** The table below shows the composition of the lower atmosphere.

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.



[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 .....

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

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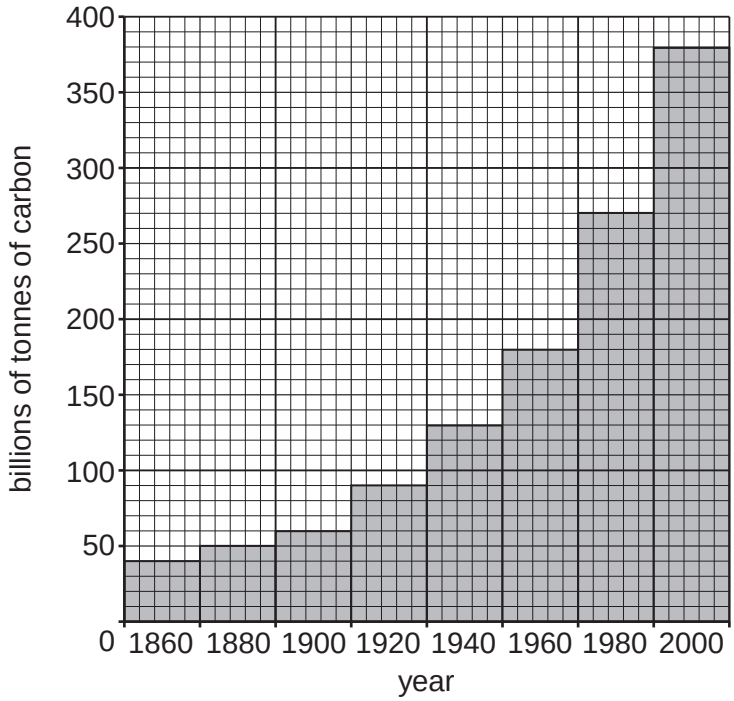
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(b) Some human actions are disrupting this natural balance.

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

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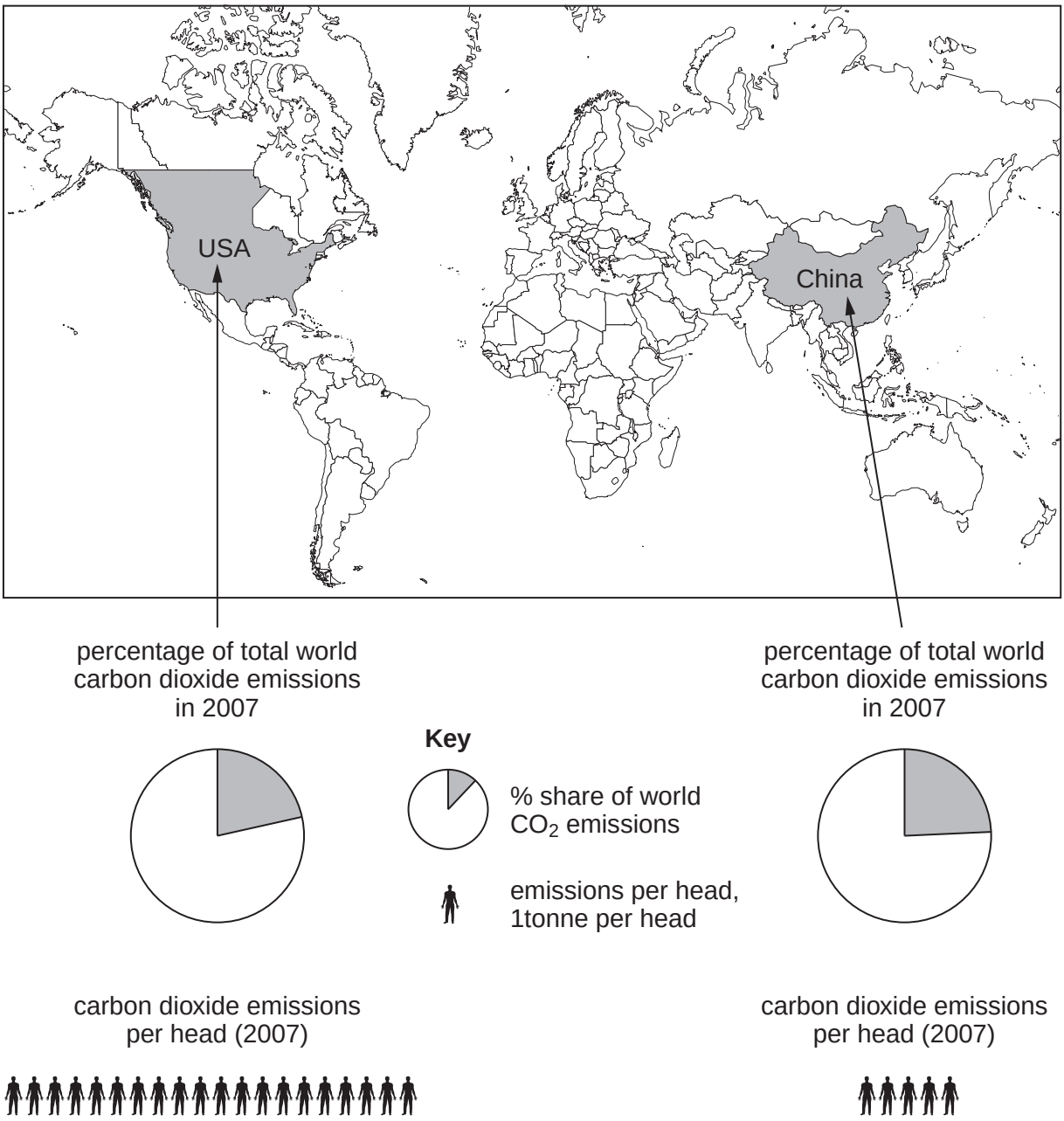
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(c) Information about the two countries in the world with the greatest carbon dioxide emissions in 2007 is given below.

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

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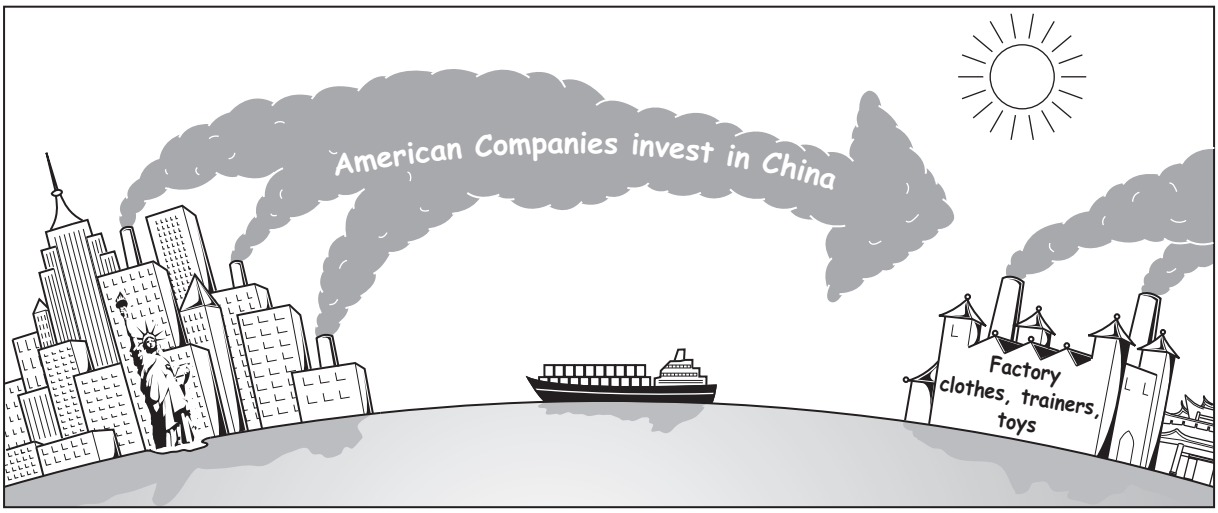
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(ii) The cartoon below is trying to explain why carbon dioxide emissions are increasing so fast in China.

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

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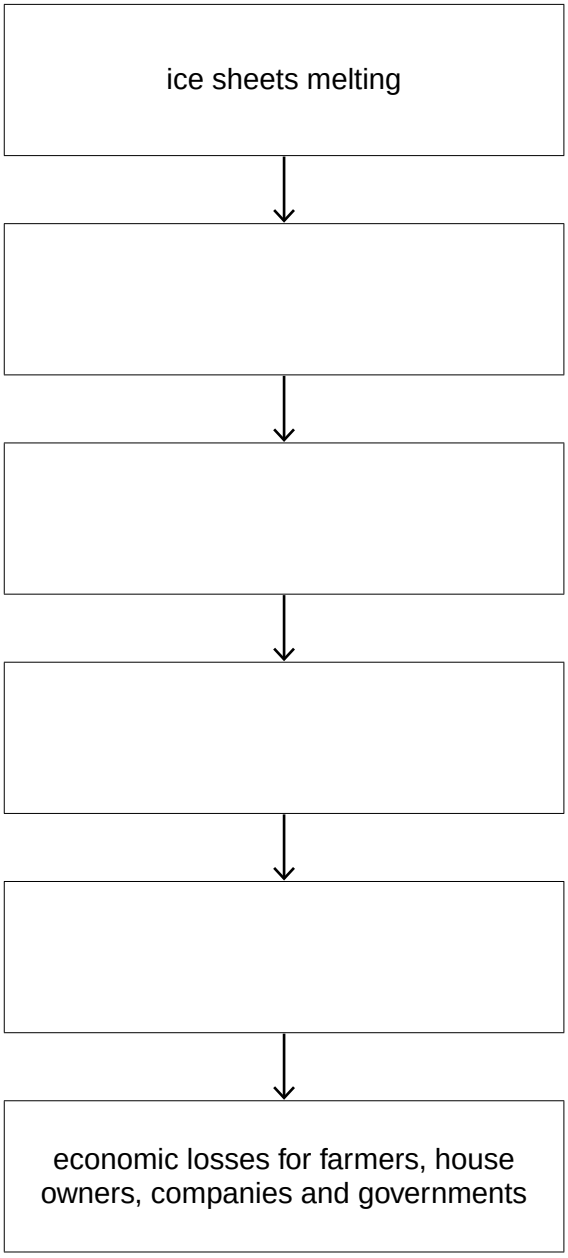
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(d) When complete, the flow diagram below will show the worldwide effects of global warming.

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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.

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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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(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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(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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(f) Read the information below.

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

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[Total: 40 marks]

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