Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

4298138811

ENVIRONMENTAL MANAGEMENT **0680/23**

Paper 2 **October/November 2014**

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

Answer **both** questions.

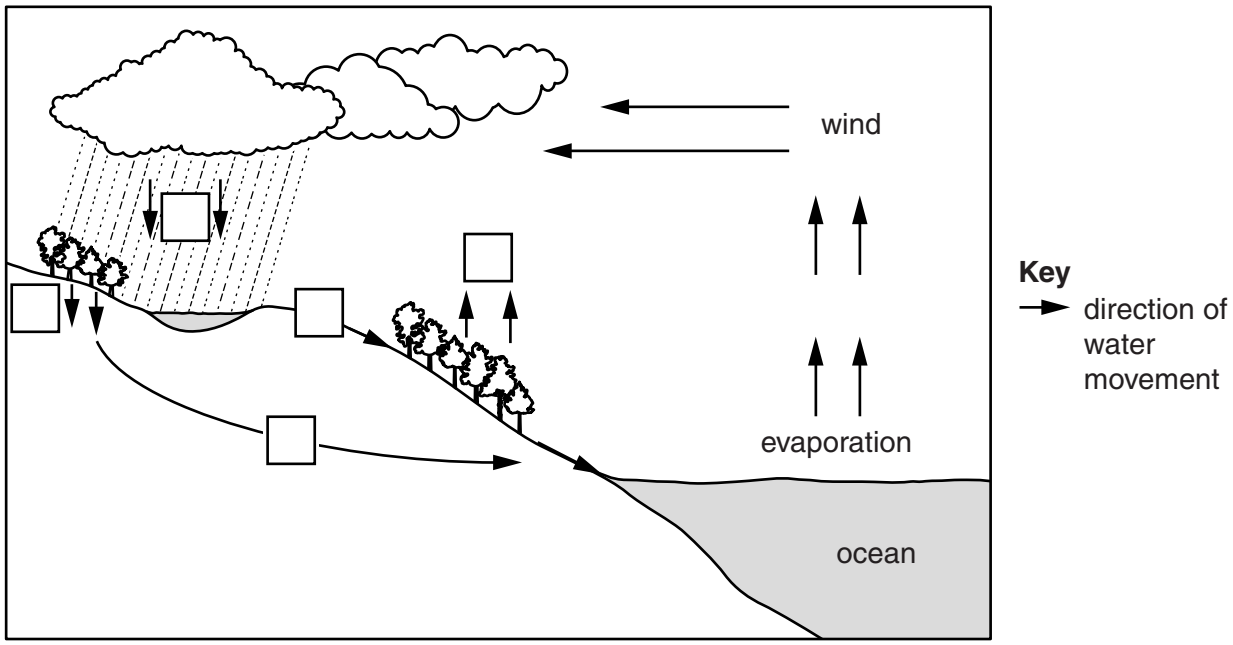
Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

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.

This document consists of **16** printed pages.

CAMBRIDGE International Examinations

1 **(a)** Look at the diagram of the water cycle.

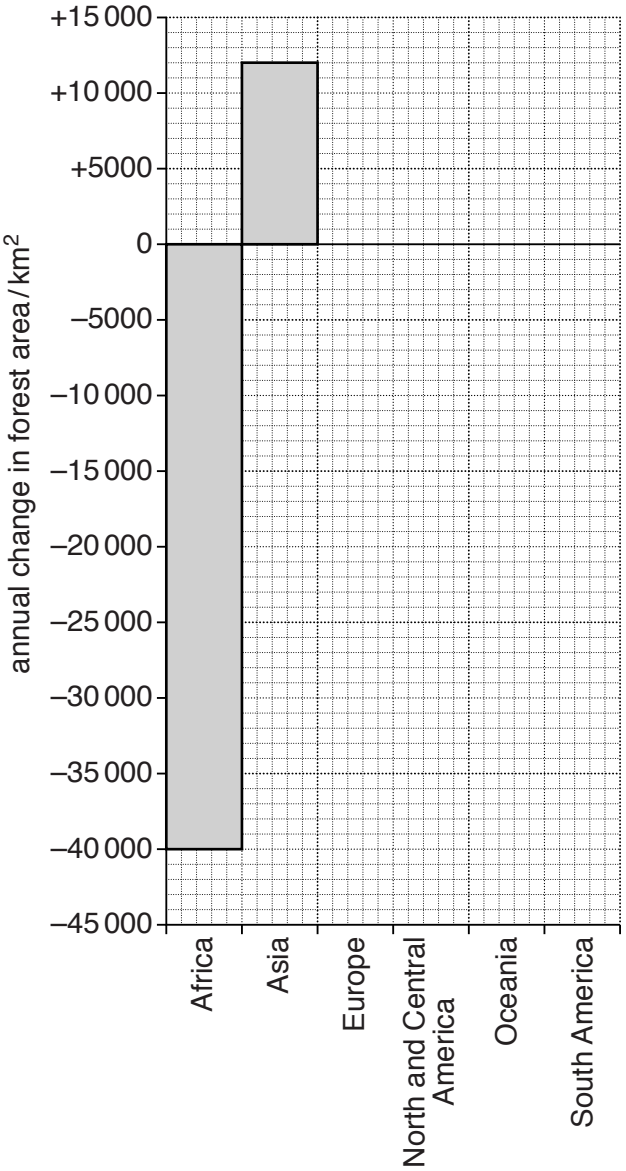


On the diagram add the letters **A**, **B**, **C**, **D** and **E** to show where the following processes occur:

A precipitation
B transpiration
C infiltration
D surface run-off
E groundwater flow [4]

(b) (i) Complete the graph, showing the annual change in forest area by continent for the period 2000 to 2005 using the figures in the table. Africa and Asia have been completed for you.

continent	annual loss of forest area / km^2	annual gain of forest area / km^2
Africa	40 000	
Asia		12 000
Europe		8000
North and Central America	3000	
Oceania	3000	
South America	43 000	



[2]

(ii) Calculate the total change in the amount of forest area.

..... km^2 [2]

(iii) Suggest **two** reasons why the land area covered by forest is increasing in some continents.

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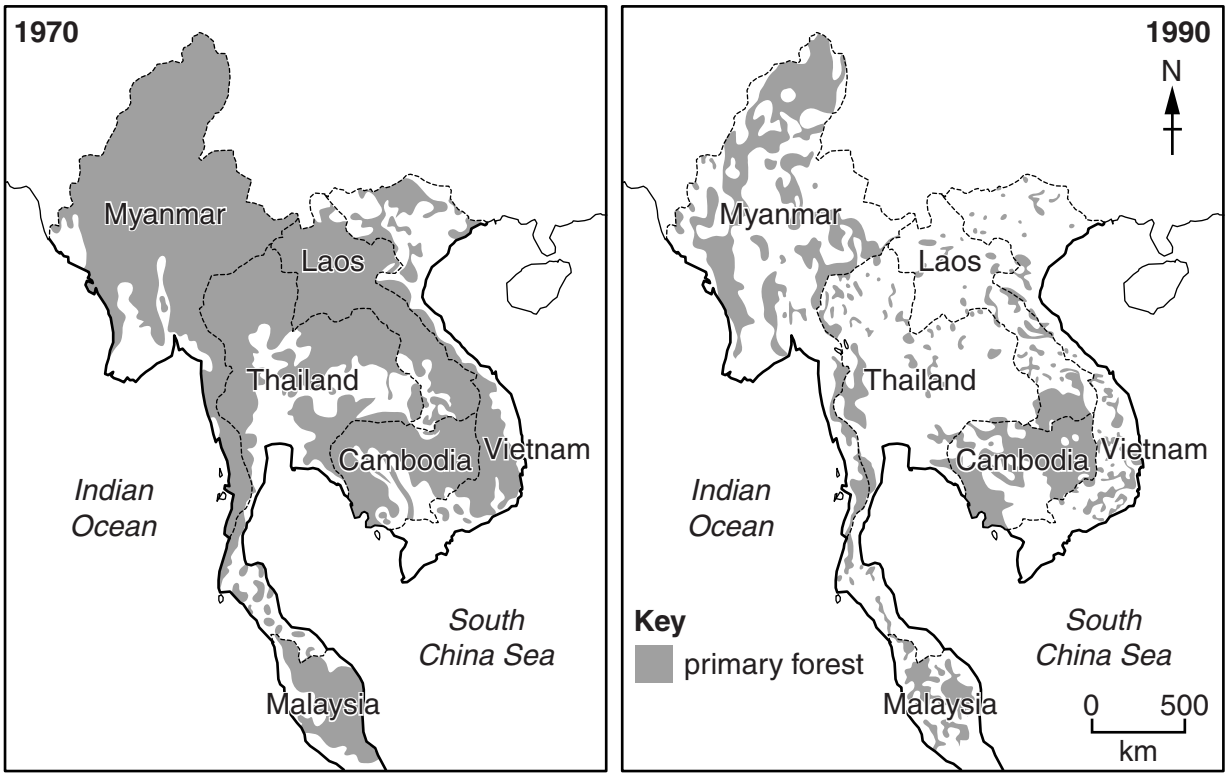
.....[2]

(c) Look at the maps, which show the reduction in forest area in south east Asia from 1970 to 1990.



(i) Name the country with the lowest percentage of forest cover in 1970.

.....[1]

(ii) Name the country where the least amount of deforestation took place between 1970 and 1990.

.....[1]

(iii) Give **two** reasons why deforestation takes place.

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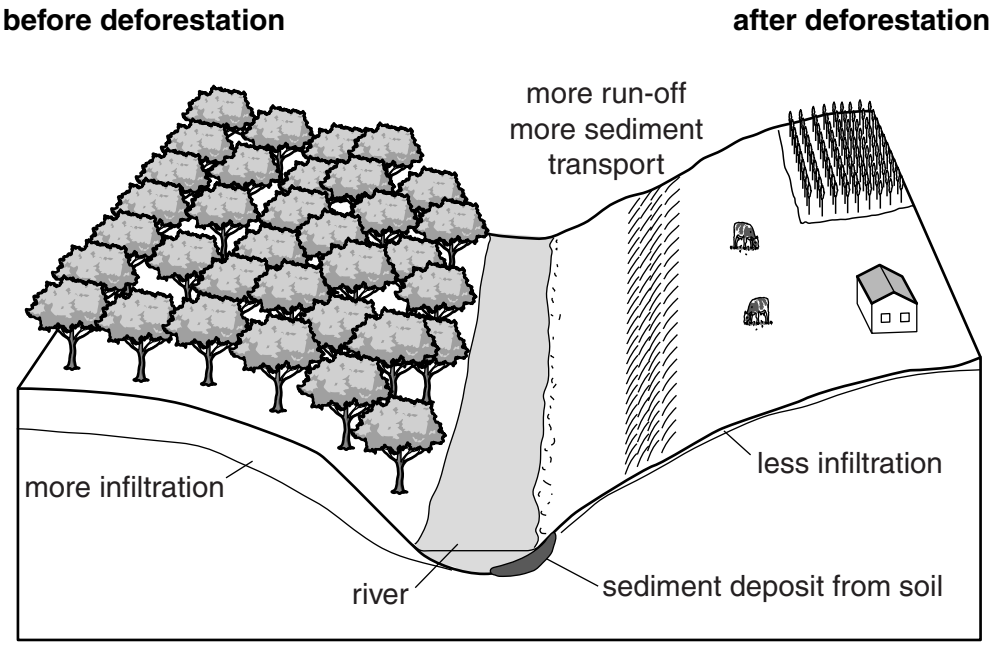
.....[2]

(d) Look at the diagram below, which shows changes in a valley as a result of deforestation.



(i) Using the diagram, explain why more sediment is washed into the river after deforestation than before deforestation.

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.....[3]

(ii) Using the diagram, explain why the river is more likely to flood after deforestation.

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(iii) Give **one** reason why a farmer, who has cleared the forest for farming, would want to stop the loss of soil into the river.

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.....[1]

(iv) Describe how a farmer, who has cleared the forest for farming, could reduce the amount of soil being washed into the river.

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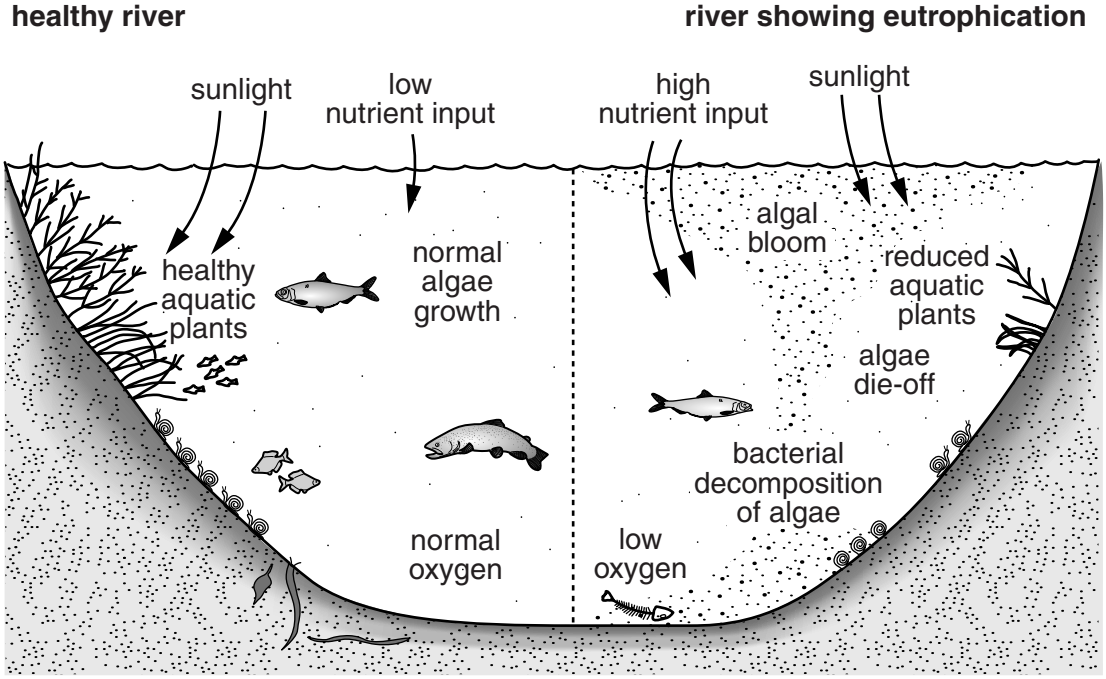
.....[3]

(e) Look at the fact sheet below.

Many farmers use fertilisers to increase their crop yields. Some of these fertilisers can get into nearby rivers. Untreated sewage often enters rivers from human settlements. Fertilisers and sewage contain compounds rich in nitrogen and phosphorus. These compounds are essential for plant growth. However, water quality is affected when they are present in large amounts. Plants, especially algae and plankton, grow quickly. Algae can cover the surface, reducing the sunlight entering the water. This is called an algal bloom. When these plants die and decay, bacteria use the oxygen dissolved in the water so the level of oxygen is reduced. Often the water is no longer clear, but green in colour. This process is called eutrophication.



(i) Describe how fertilisers can get into rivers.

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.....[2]

(ii) Explain why an algal bloom causes aquatic plants in the river to die.

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.....[2]

(iii) Explain why eutrophication of a river can cause fish to die.

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.....[2]

(iv) Suggest ways in which farmers and people living in settlements could reduce the risk of eutrophication described in the fact sheet.

farmers .....

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people .....

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.....[4]

(f) How far do you agree with the following statement? 'We need to clear more forests for farmland to feed the increasing world population.' Give reasons for your answer.

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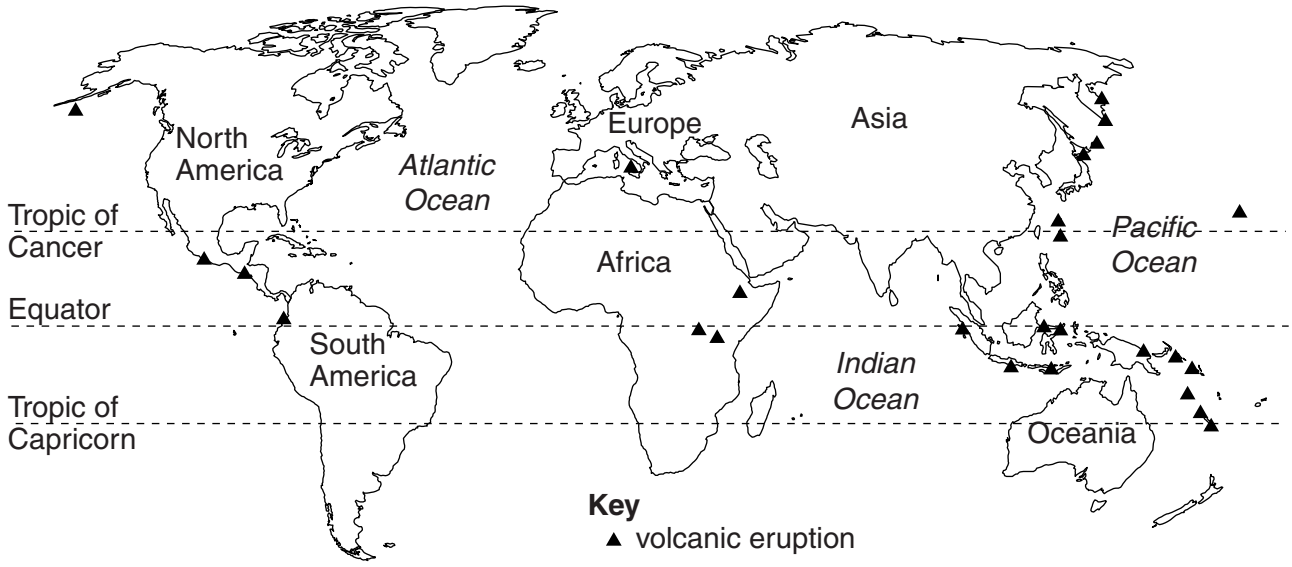
.....[6]

[Total: 40]

2 **(a)** Look at the map, showing volcanic eruptions during one week in September 2013.



Describe the distribution of volcanic eruptions shown on the map.

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.....[4]

[Turn over

(b) Look at the table below, which lists the 10 volcanic eruptions that caused the largest loss of life during the 20th century.

volcano	country	year	deaths	major cause of deaths
Soufriere	St. Vincent	1902	1680	ash flows
Mount Pelée	Martinique	1902	29 025	ash flows
Taal	Philippines	1911	1335	ash flows
Kelut	Indonesia	1919	5110	mud flows
Lamington	Papua New Guinea	1951	2942	ash flows
Hibok-Hibok	Philippines	1951	500	ash flows
Agung	Indonesia	1963	1184	ash flows
El Chichon	Mexico	1982	2000	ash flows
Ruiz	Colombia	1985	25 000	mud flows
Pinatubo	Philippines	1991	800	disease

(i) Using the table, name the volcano which caused the most deaths.

.....[1]

(ii) Name the country listed in the table which had the most eruptions.

.....[1]

(iii) Using the table, put the major causes of death in order, starting with the highest.

highest .....

.....

lowest ..... [1]

(c) Suggest why lava flows are not a major cause of deaths during volcanic eruptions.

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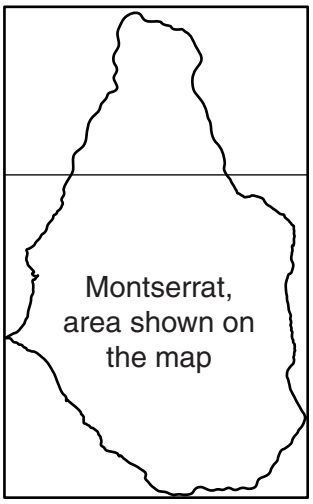
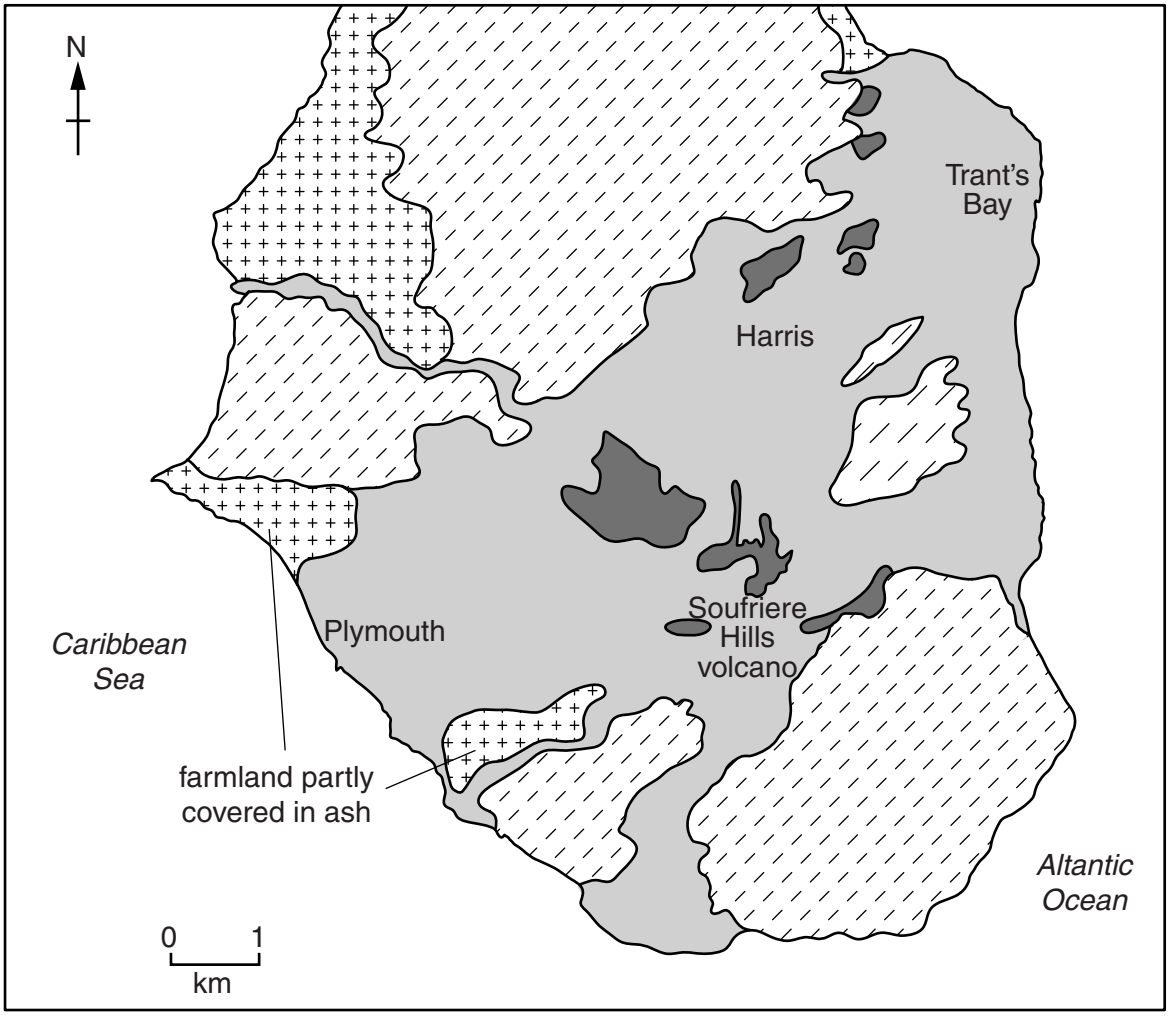
.....[2]

(d) Look at the map of the southern part of the island of Montserrat in February 2010.

Montserrat is a tropical island in the Caribbean, with white beaches and tropical rainforest. The lava, ash and mud flows result from the eruptions of the Soufriere Hills volcano. The volcano has erupted vast amounts of ash, which is several metres thick in much of the southern part of Montserrat. The volcano has been erupting since 1995. Plymouth used to be the capital city. Harris was a farming village. The airport for Montserrat was located at Trant's Bay. Nearly all the land shown on the map is now an exclusion zone, where entry is not allowed.





Key

- tropical rainforest
- ash, mud flows
- bare rock and lava
- farmland

(i) Suggest why people are no longer allowed into the southern part of Montserrat.

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(ii) Describe the effects of the continuing eruptions on the people and economy of Montserrat.

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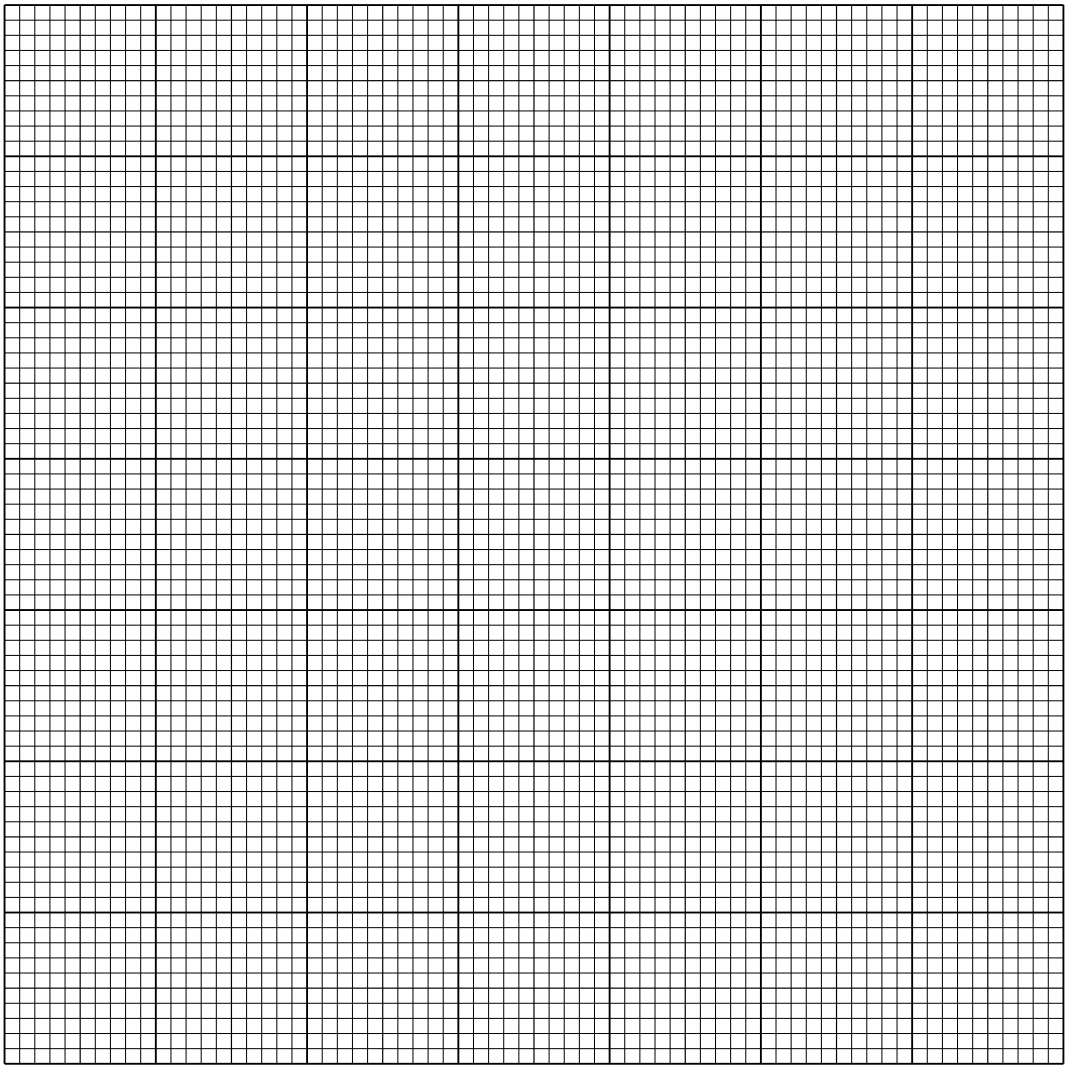
(iii) On the grid below, draw a line graph to show the changes in the population of Montserrat from 1991 to 2011.

year	population
1991	12 100
1996	12 500
2001	2700
2006	4700
2011	5100



[4]

(iv) Calculate the percentage decrease in the population of Montserrat between 1996 and 2001.

..... % [2]

(v) Suggest how the volcanic eruption affected the natural vegetation and wildlife of the southern part of Montserrat and the surrounding seas.

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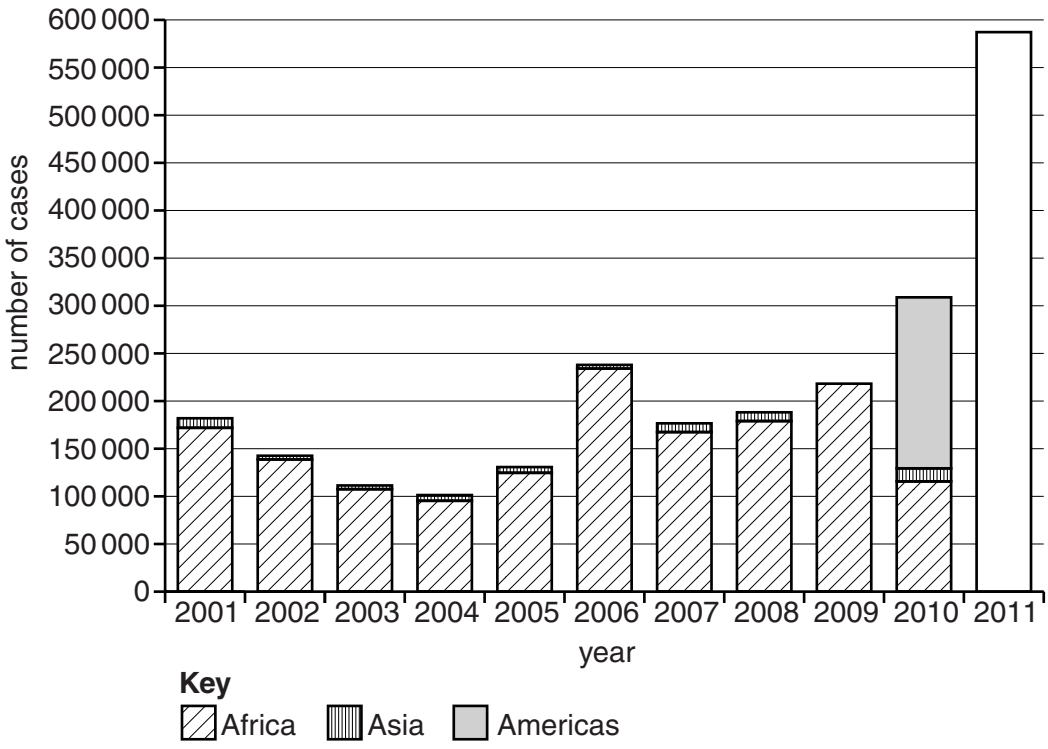
.....[4]

(e) After natural disasters people often become ill and may die due to water-borne diseases such as cholera.

Look at the bar graph, which shows the number of reported cases of cholera by continent from 2001 to 2011.



(i) Complete the bar for 2011 using the following figures:

Africa	190 000
Asia	40 000
Americas	360 000

[2]

(ii) State the continent where cholera was reported every year.

.....[1]

(iii) Describe how cholera is spread **and** explain why it is much more likely after a natural disaster such as flooding or an earthquake.

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(f) Malaria is a water-bred disease, which kills many people every year.

(i) Explain why malaria is a water-bred disease.

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(ii) Suggest the best ways to control the spread of malaria. Give reasons for your answer.

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[Total: 40]