Cambridge O Level

Cambridge International Examinations
Cambridge Ordinary Level

CANDIDATE NAME	

CENTRE NUMBER						CANDIDATE NUMBER				

5700620932

ENVIRONMENTAL MANAGEMENT **5014/12**

Paper 1 **October/November 2015**

2 hours 15 minutes

Candidates answer on the Question Paper.

No Additional Materials are required.

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 **all** 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.

Write your answers in the spaces provided on the Question Paper.
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.

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

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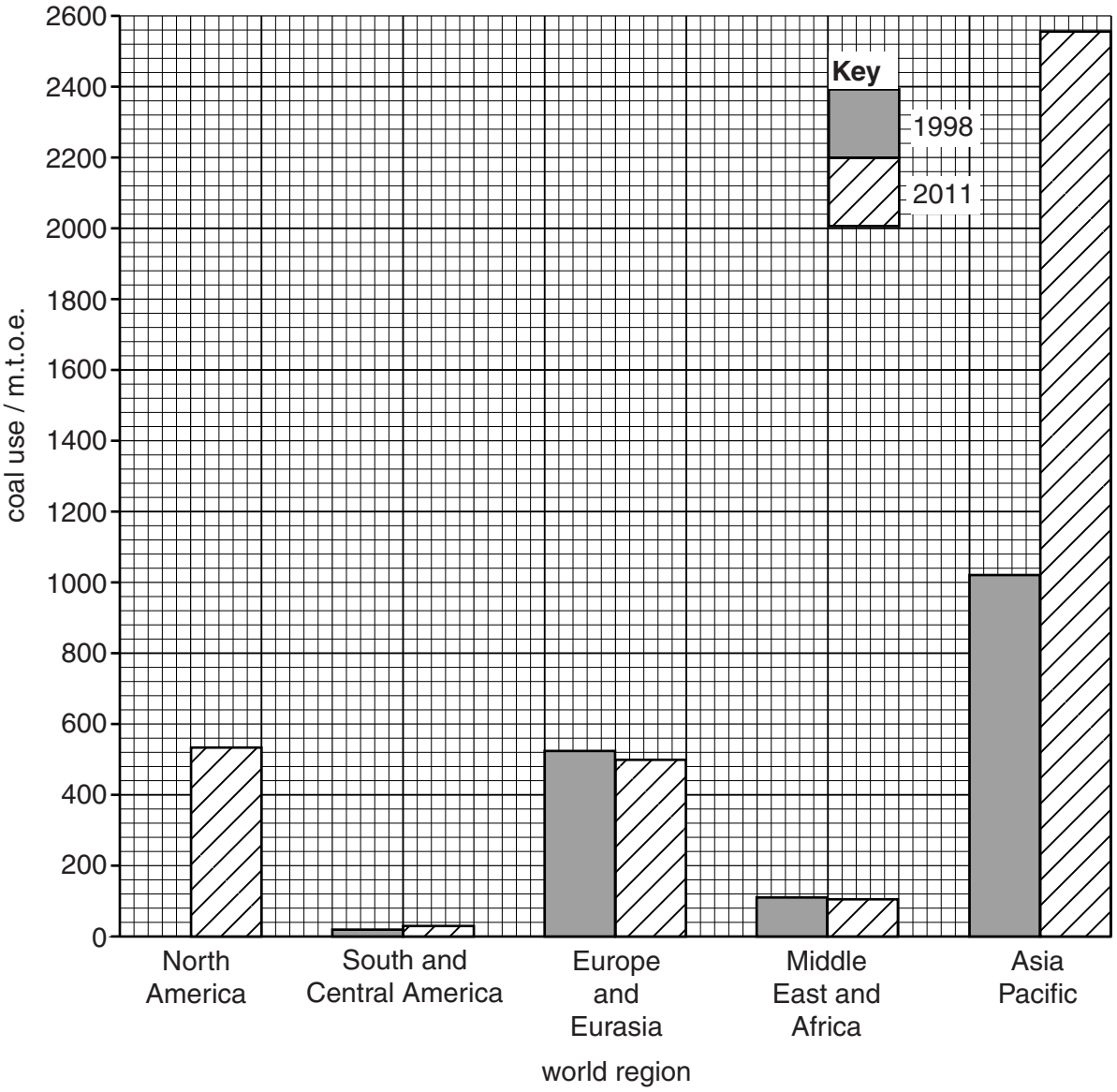
Section A

Answer **all** the questions.

1 **(a)** Look at the diagram, which shows the use of coal in world regions in 1998 and 2011 in millions of tonnes of oil equivalent (m.t.o.e.).



(i) Complete the diagram to show that North America used 480 m.t.o.e. of coal in 1998. Use the key provided. [1]

(ii) Calculate the increase in the use of coal in the Asia Pacific region between 1998 and 2011.

Space for working.

..... m.t.o.e. [1]

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(iii) Briefly compare the change in the use of coal between 1998 and 2011 in the Asia Pacific region with the change in Europe and Eurasia.

.....

.....[1]

(b) Suggest **one** reason for the change in the amount of coal used in the Asia Pacific region between 1998 and 2011.

.....

.....[1]

(c) Explain why many people think that the worldwide use of coal should be reduced.

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.....[3]

(d) Suggest **one** different disadvantage of each of the following sources of energy.

(i) wind

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.....[1]

(ii) nuclear

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.....[1]

(iii) biomass

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.....[1]

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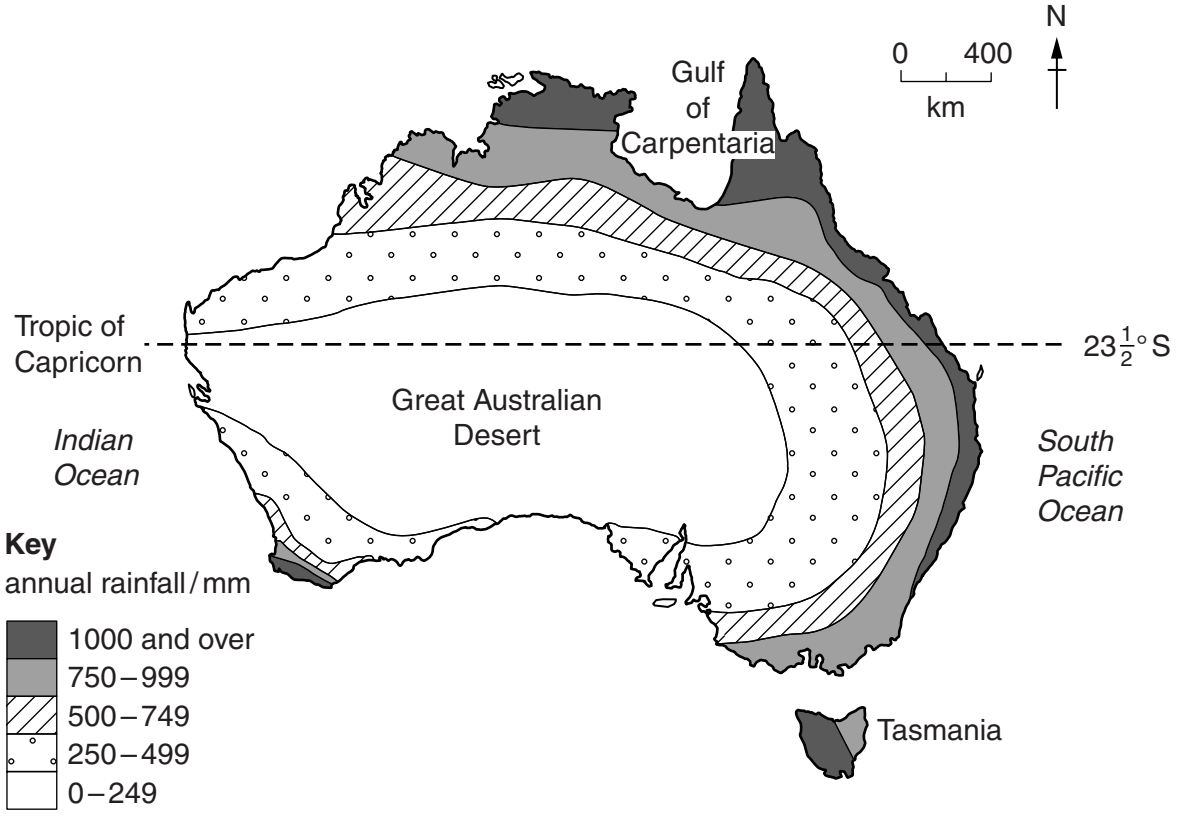
2 **(a)** Look at the map, which shows how rainfall is distributed in Australia.



(i) State the amount of annual rainfall in the Great Australian Desert.

..... mm [1]

(ii) Describe the distribution of the areas of Australia that have more than 1000 mm of annual rainfall.

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.....[2]

(b) Look at the area of Australia that is north of the Tropic of Capricorn.

Suggest why much of the rainfall in northern Australia is lost before it can be absorbed by plants.

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.....[1]

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(c) **(i)** Describe ways in which farming is made possible in areas that have low rainfall.

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.....[3]

(ii) During droughts, the authorities often reduce the amount of water for crop farming so that there is enough for other essential needs.

Suggest **one** use of water which would be considered to be essential.

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.....[1]

(d) Drought is when there is a longer period without rain than is usual for a place.

Explain how drought is caused. You should refer to atmospheric pressure and air movement in your answer.

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.....[2]

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3 **(a)** **(i)** Look at the information below about wet rice farming.

> Wet rice needs to stand in water during the growing season.
>
> - earth bank built around the small fields
> - rice seedlings grown in nursery
> - seedlings planted in flooded fields by hand
> - fields drained
> - rice harvested

State **two** ways in which this evidence suggests this wet rice farming is intensive.

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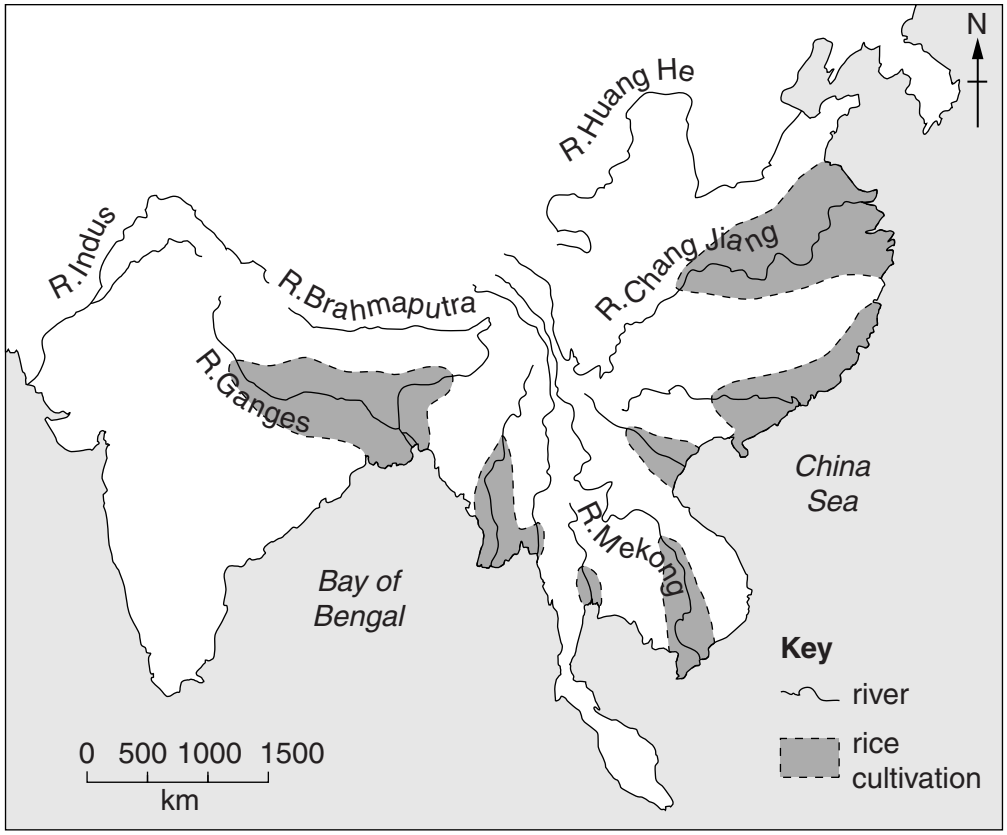
.....[2]

(ii) Look at the map, which shows the main areas of rice cultivation in mainland South East Asia.



Using the map, suggest why the areas shown are very suitable for wet rice cultivation.

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.....[2]

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(b) Look at the table which shows information about China since the Green Revolution. Rice is an important food in China.

	year		1960 – 2010 percentage increase
	1960	2010	
rice production / million tonnes	100	202.6	102.6
population / millions	680	1340.0	97.1

(i) Show how the percentage increase in China's rice production between 1960 and 2010 was calculated.

[1]

(ii) Use the information in the table to comment on the importance for China of the Green Revolution.

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.....[1]

(c) Describe the methods used in the Green Revolution to increase agricultural production.

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.....[4]

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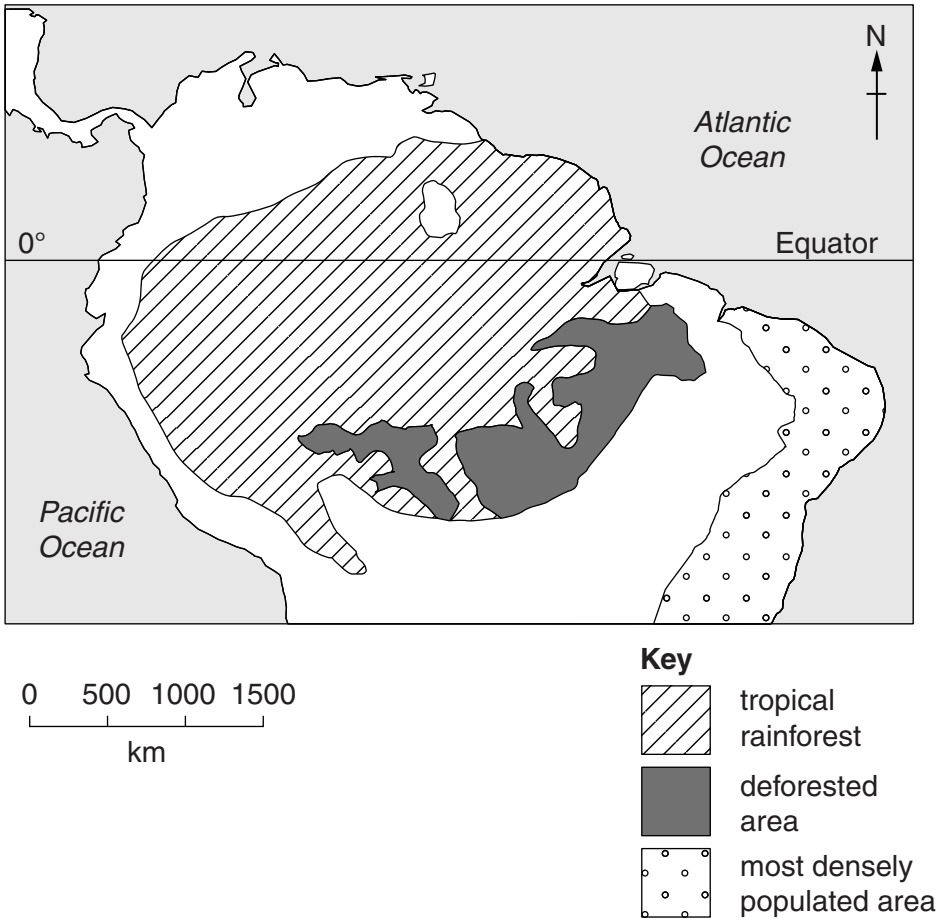
4 **(a)** Look at the map, which shows the extent of tropical rainforest and deforested areas in the Amazon Basin of South America.



(i) Use the map to estimate the percentage of forest lost by deforestation.

Circle the percentage below that is nearest to your estimate.

5% **20%** **35%** **50%** [1]

(ii) Describe the location of the deforested areas shown on the map.

.....

.....[1]

(iii) Using the map, suggest a reason for the location of the deforested areas.

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.....[1]

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(b) **(i)** Explain how hunter-gatherers use the tropical rainforests.

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.....[2]

(ii) Some people living in the forest grow crops on an area of land for several years and then move on to clear a different area.

Explain why this method of farming does not do any long-term damage.

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.....[2]

(c) Suggest, with reasons, the impact that the clearance of tropical rainforest will have on native animals.

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.....[3]

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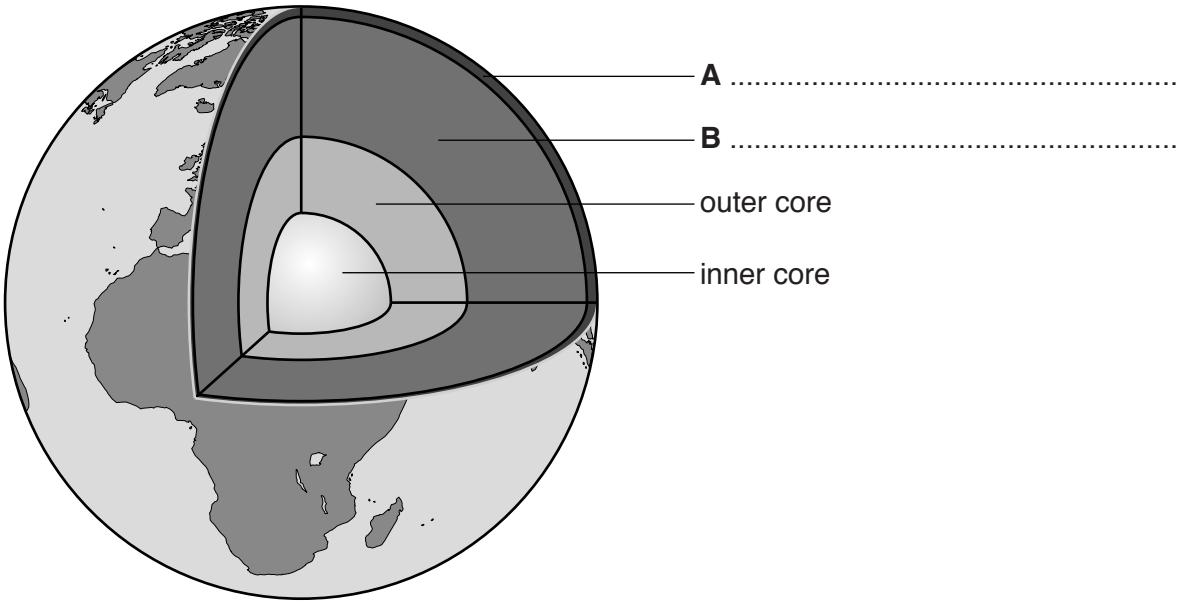
Section B

Answer **both** questions.

5 **(a)** Look at the diagram which shows the structure of the Earth.

Complete labels **A** and **B** on the diagram by writing in the names of the layers.



[2]

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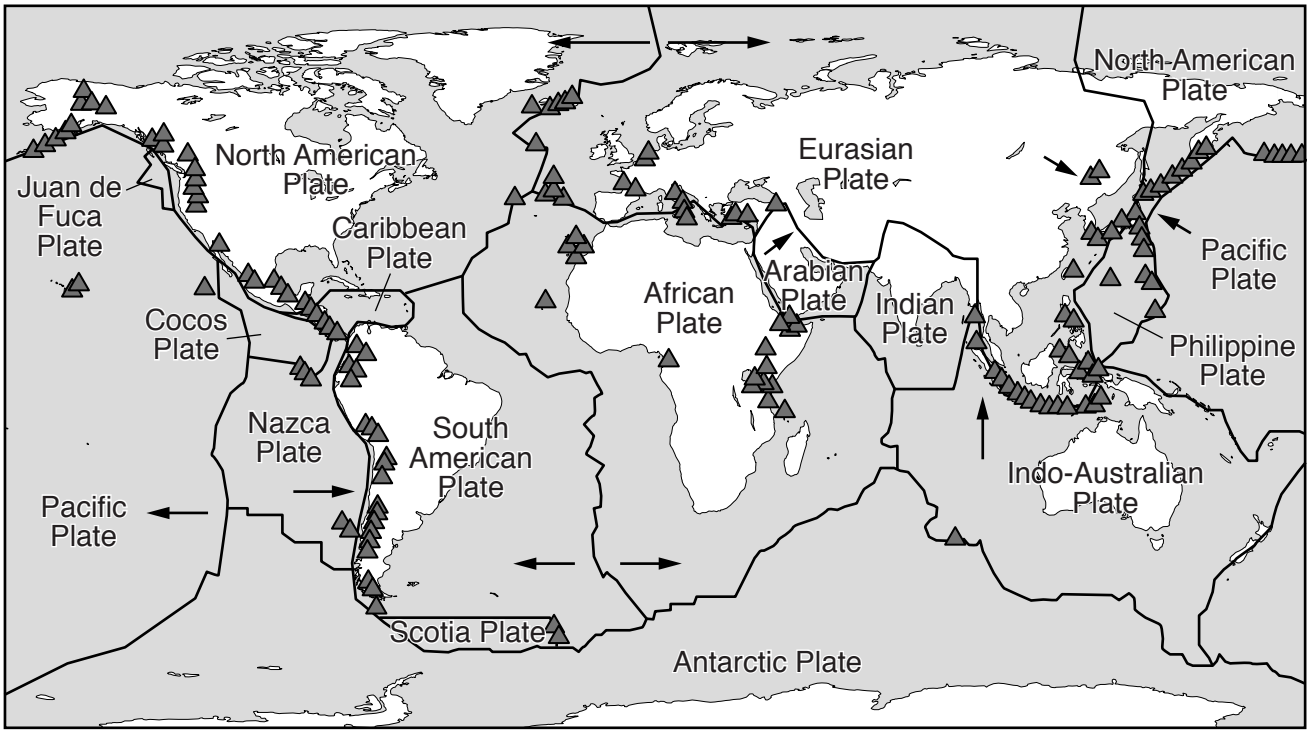
(b) Look at the map, which shows plate boundaries and the distribution of volcanoes in the world.



Key

plate boundary

volcano

direction of plate movement

(i) State the names of **two** plates that are moving apart and **two** plates that are at a destructive plate boundary.

moving apart .....

at a destructive plate boundary .....
[2]

(ii) Using the map, describe the world distribution of volcanoes.

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.....[3]

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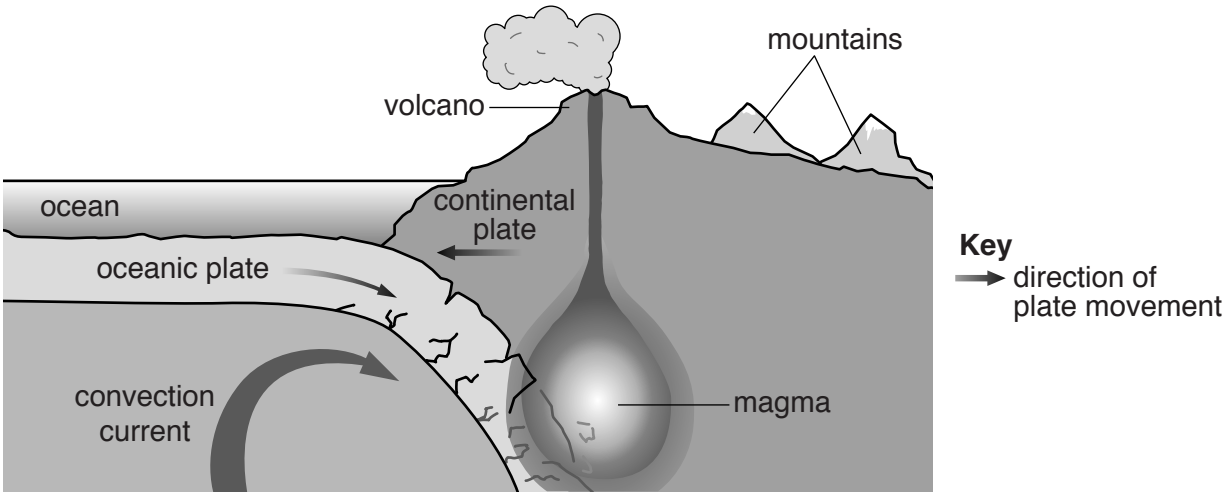
(iii) Look at the diagram, which shows a destructive plate boundary.



Explain how volcanoes are formed at this type of plate boundary.

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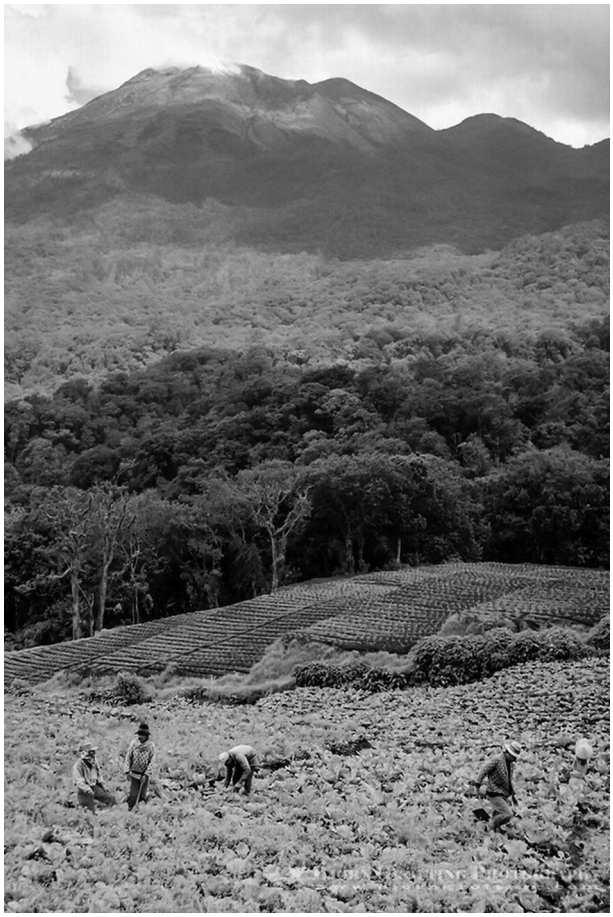
(c) Look at the photograph, which shows an area surrounding a volcano in Java.



(i) Describe **and** explain an economic advantage of living near the volcano that is shown in the photograph.

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.....[2]

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(ii) Explain **two** problems that can be caused by volcanic eruptions.

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.....[4]

(iii) State **two** ways in which the impact of volcanic eruptions can be reduced.

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.....[2]

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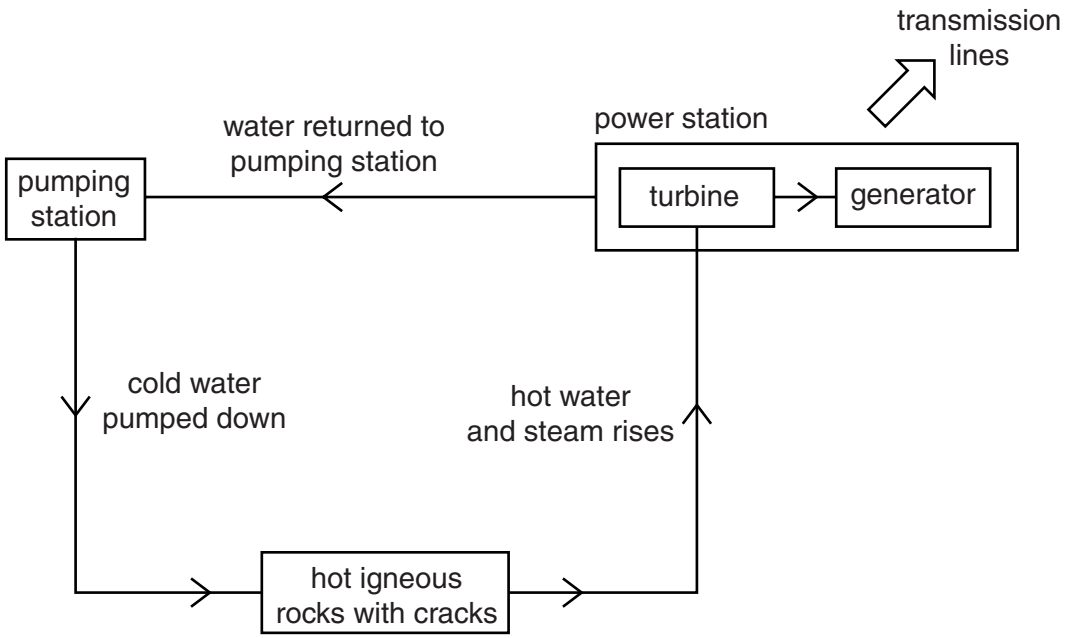
(d) Look at the diagram which shows how electricity is produced using geothermal energy.



(i) Explain how electricity is produced as shown by the diagram.

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.....[3]

(ii) Is geothermal energy a sustainable source of energy? Explain your point of view.

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.....[4]

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(e) Look at the information below about floods in Mozambique. Flooding is an example of a climatic hazard.

> Mozambique is a country in south east Africa. In February 2000, the country experienced severe floods. There had been heavy rain in January and February. It had rained continuously for five weeks and the ground was full of water (saturated). Usually, 175 mm of rain falls in February in Mozambique, but in February 2000 there was 1160 mm of rain. This meant that there was a large amount of surface run-off into the Zambezi and Limpopo rivers, which eventually burst their banks in Mozambique.
>
> When Cyclone Eline hit the region it brought high winds and more heavy rain. Experts say that the floods had also been made worse by human activity in the region, such as changing grassland for crop farming, draining wetlands and urbanisation of the floodplain. It is predicted that Mozambique will take years to recover from this disaster.

(i) Identify **three** causes of the floods in Mozambique.

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.....[3]

(ii) Calculate how much more rain fell in February 2000 than the usual average for this month.

Space for working.

..... mm [1]

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(iii) Suggest how urbanisation and deforestation can increase the flood risk in places such as Mozambique.

urbanisation .....

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deforestation .....

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[4]

(f) The impact of earthquakes and volcanoes is often greater in developing countries than in developed countries. To what extent do you agree with this point of view? Give reasons for your answer.

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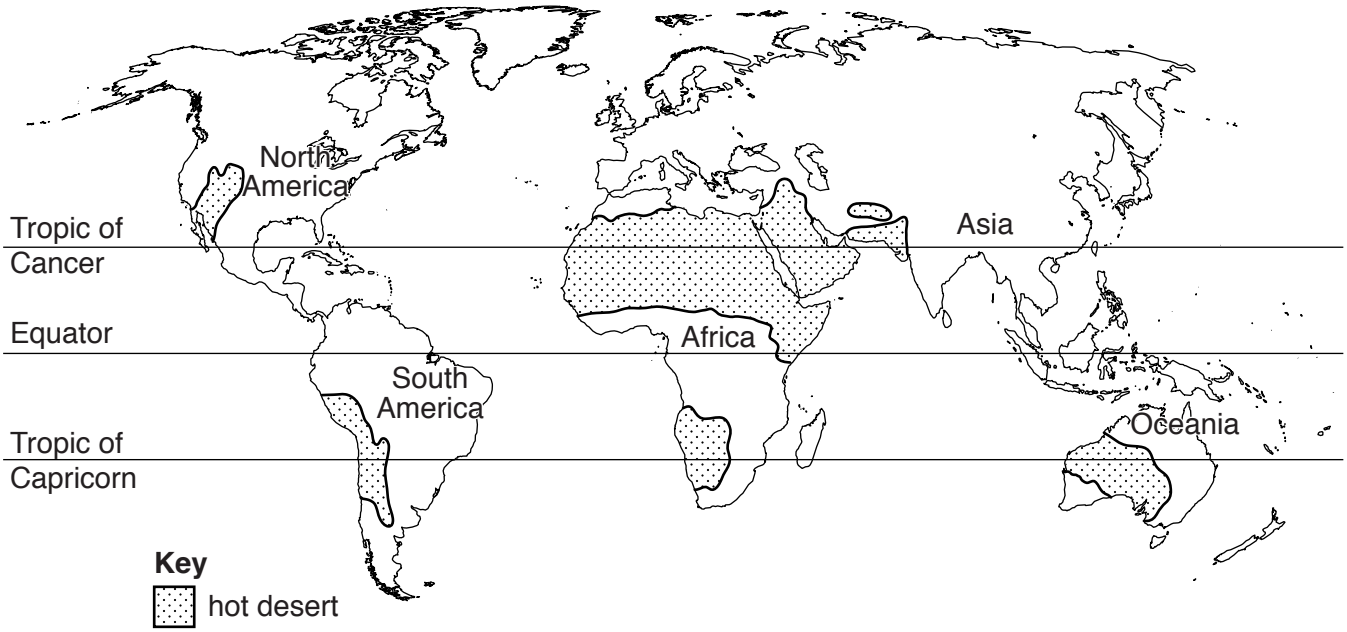
6 **(a)** Look at the map below, which shows the hot deserts of the world.



(i) Describe the distribution of hot deserts shown on the map.

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.....[2]

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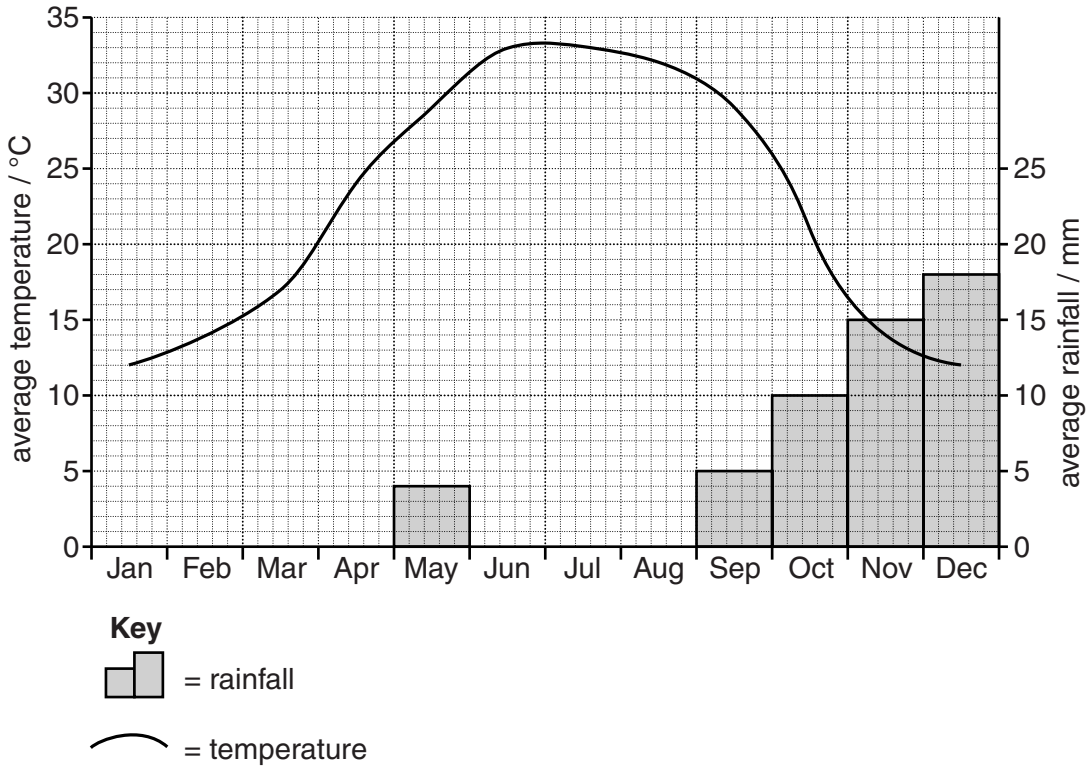
(ii) The table below shows average monthly temperatures and rainfall for a hot desert. Use the information in the table to complete the graph for rainfall. [2]

	J	F	M	A	M	J	J	A	S	O	N	D
rainfall / mm	20	15	8	5	4	0	0	0	5	10	15	18
temperature / °C	12	14	17	24	29	33	33	32	29	21	14	12



(iii) Using evidence from the graph and table, describe rainfall throughout the year.

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.....[3]

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(iv) Use data from the table and graph to state the number of months below 20 °C.

.....[1]

(v) Use data from the table and graph to calculate the annual temperature range (the difference between the highest and lowest temperature in a year).

.....[1]

(vi) State the relationship between temperature and rainfall shown for this hot desert.

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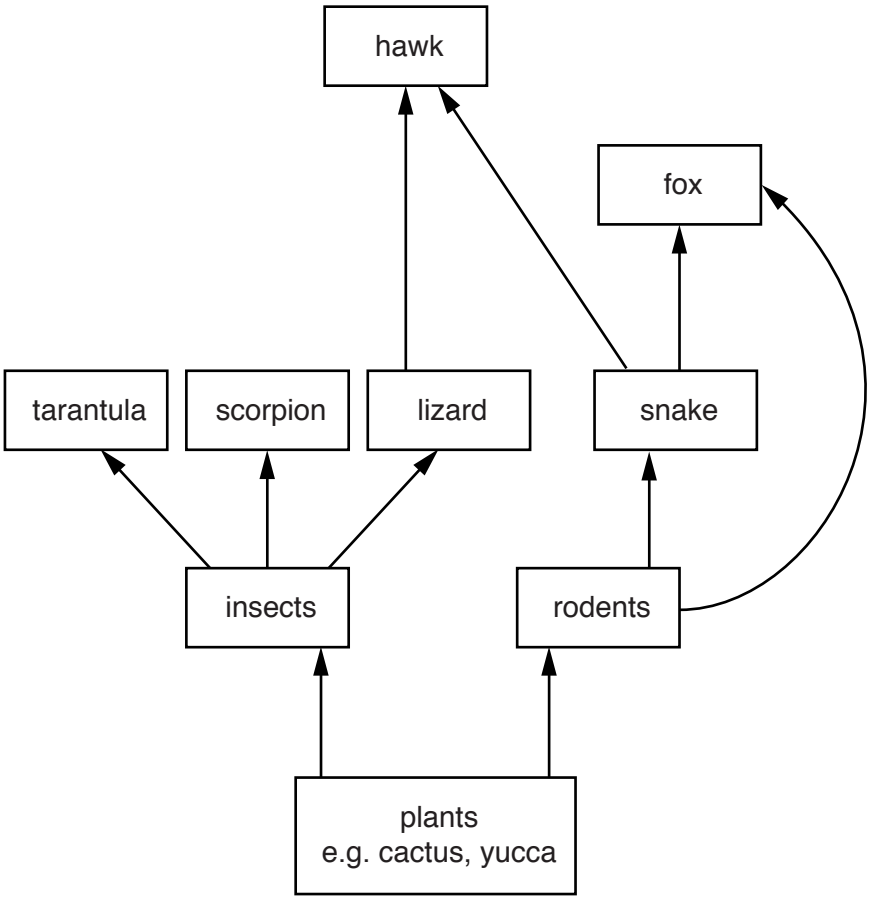
.....[1]

(b) (i) Look at the diagram, which shows a food web in a hot desert ecosystem. Use the diagram to complete the table below with **one** example for each.



producer	.....
consumer	.....

[1]

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(ii) Suggest what would happen to the food web if the number of lizards increased.

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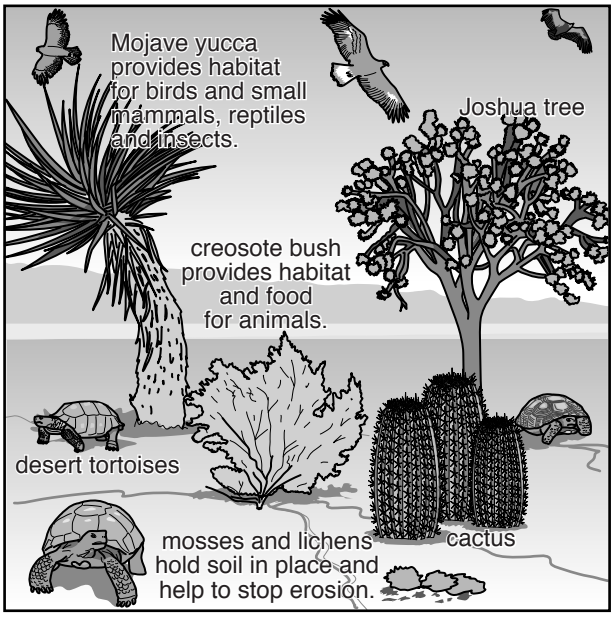
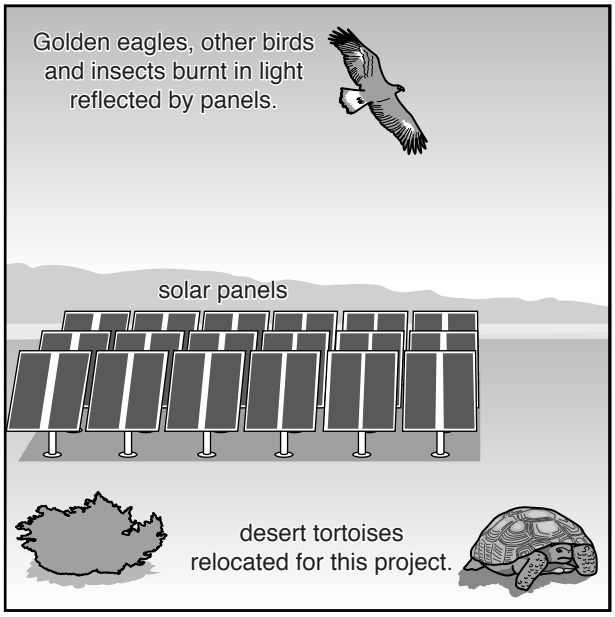
.....[3]

(c) Look at the diagrams, which show an ecosystem in the Mojave Desert in the United States of America.

before



after



(i) Describe **and** explain how desert vegetation, such as that shown in the **before** diagram, has adapted to survive in the hot desert climate.

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.....[4]

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(ii) Look again at the diagrams of the Mojave Desert. Describe the impact that solar panels are having on the ecosystem shown in the diagrams.

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.....[3]

(iii) Suggest reasons why countries might want to develop solar power as a source of energy.

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.....[3]

(iv) Other than the impact on ecosystems, state **three** possible disadvantages of relying on solar power.

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.....[3]

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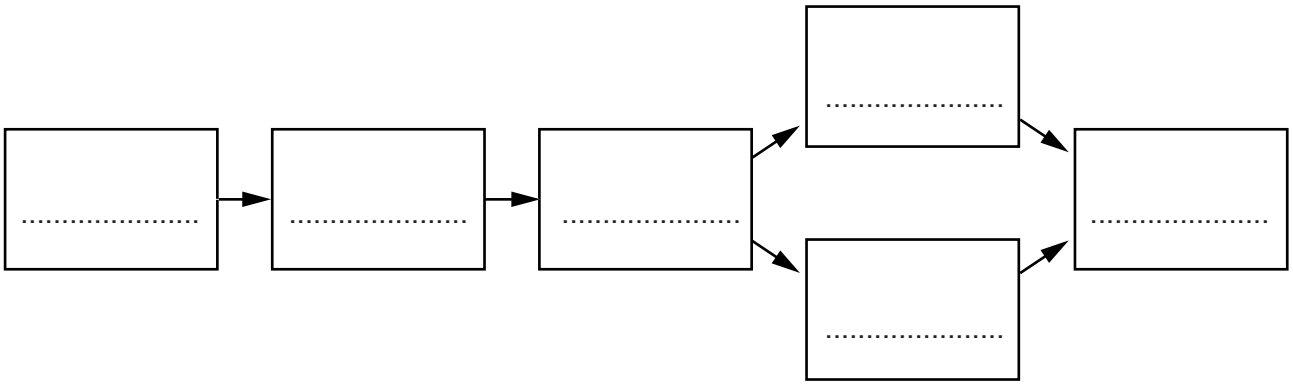
(d) **(i)** Define the term *desertification.*

.....

.....[1]

(ii) Insert the letters **A**–**F** into the boxes in the correct order on the flow diagram below to show a human cause of desertification.



A overgrazing
B increased population
C more demand for food
D soil loses structure
E soil blown and washed away
F vegetation removed [3]

(iii) Explain **two** impacts of desertification on people.

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.....[3]

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(e) Soil is needed to grow enough food for our increasing world population. Suggest strategies for soil management and conservation that will help to ensure that soil is a sustainable resource.

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.....[6]

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