Centre Number	Candidate Number	Name

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

ENVIRONMENTAL MANAGEMENT **5014/01**

Paper 1

October/November 2004

2 hours 15 minutes

Candidates answer on the Question Paper.
Additional Materials: Ruler (cm/mm)
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 in the spaces provided on the Question Paper.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.
The number of marks is given in brackets [ ] at the end of each question or part question.
All questions in Section A carry **10** marks.
Both questions in Section B carry **40** marks.

If you have been given a label, look at the details. If any details are incorrect or missing, please fill in your correct details in the space given at the top of this page.

Stick your personal label here, if provided.

FOR EXAMINER'S USE	
1	
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TOTAL	

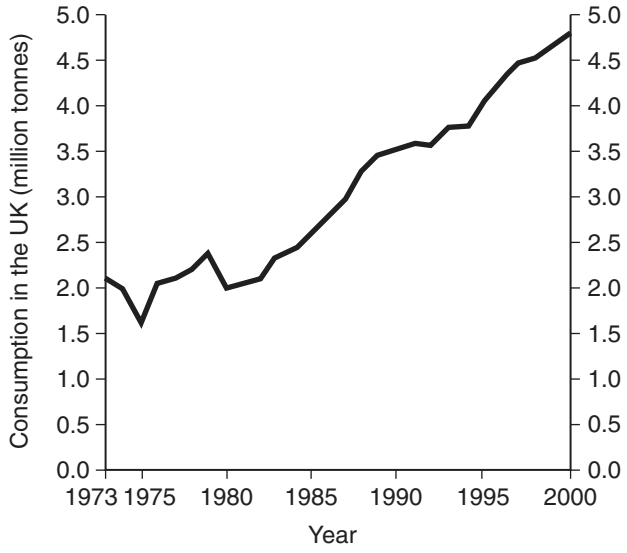
This document consists of **22** printed pages and **2** blank pages.

UNIVERSITY of CAMBRIDGE
International Examinations

[Turn over

Section A

1 **(a)** The graph shows total use of plastic in the UK.



(i) How much plastic was used in the UK in 1985?

.....million tonnes [1]

(ii) Compare the amounts of plastic used in the UK before and after 1985.

.....

.....

.....[2]

(b) **(i)** In Europe much domestic waste, including plastic, is buried underground in landfill sites. Why is this not sustainable?

.....

.....[1]

(ii) Describe **three** ways that domestic waste, such as plastic, can lead to pollution.

.....

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.....[3]

(c) Suggest

(i) strategies that could be used to reduce the amount of domestic waste,

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(ii) why such strategies have been little used in some parts of the world.

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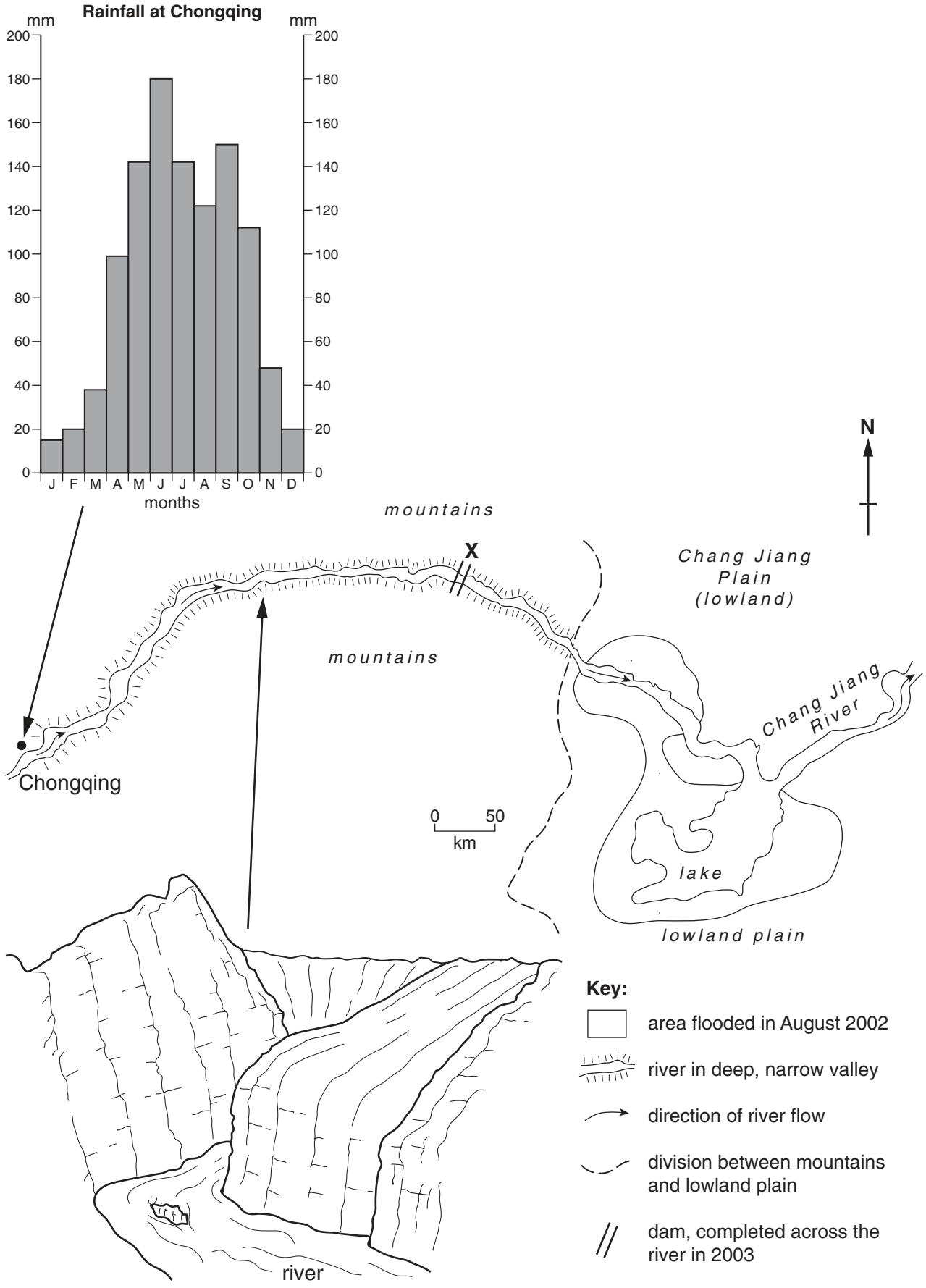
.....[3]

2 Study the information below about part of the Chang Jiang River Basin.



(a) (i) At Chongqing which month has the highest mean monthly rainfall?

month .....

How much does it have? .....mm [1]

(ii) Until 2003, flooding was frequent in the area of the Chang Jiang Plain that is shaded on the map. Use the diagram to help you explain

– why floods on the Chang Jiang Plain occurred mostly between June and October,

.....

.....[1]

– how the land through which the river flows between Chongqing and the Chang Jiang Plain helps to cause a rapid rise in the river after heavy rain,

.....

.....[1]

– why the largest area flooded was on the Chang Jiang Plain.

.....

.....[1]

(b) By 2003, a dam 1938 metres long and 185 metres high, had been constructed across the River Chang Jiang at **X**. What advantages are likely to result from this?

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.....[3]

(c) Why do some people object to the building of large dams?

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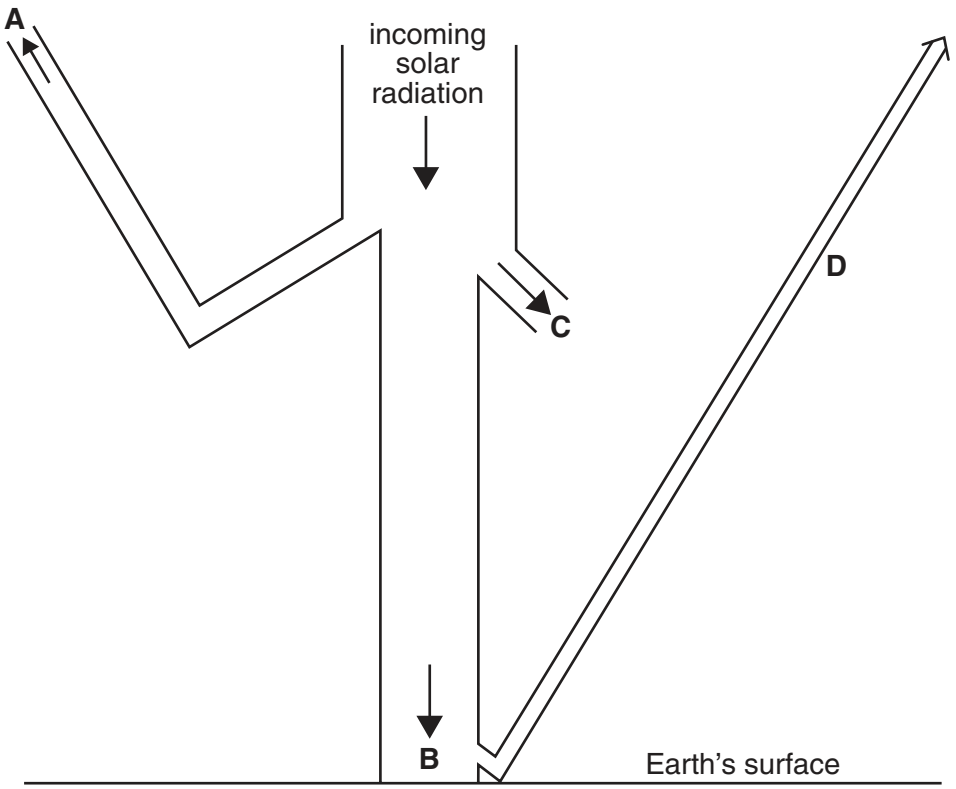
.....[3]

3 The diagram shows what happens to incoming solar radiation.



(a) From the list below, find the correct label for each of the letters **A**, **B**, **C** and **D** in the diagram. Write **A**, **B**, **C** and **D** against the correct label in the list below.

label	letter
absorption by the atmosphere	.....
absorption by the Earth's surface	.....
reflection by the Earth's surface	.....
reflection by the atmosphere	.....

[4]

(b) How do different types of surface on the Earth affect the amount of solar radiation absorbed?

.....

.....

.....

.....

.....[3]

(c) Greenhouse gases are thought to cause global warming. Choose **one** of these gases and suggest how emissions of this gas could be reduced.

gas .....

how emissions could be reduced .....

.....

.....[3]

4 **(a)** The following terms are used in studies of ecosystems. What do they mean?

(i) predator .....

.....[1]

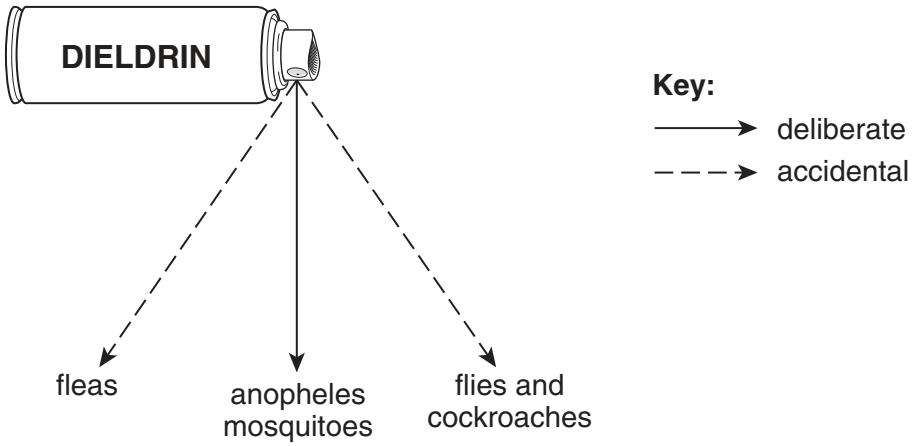
(ii) population .....

.....[1]

(iii) community .....

.....[1]

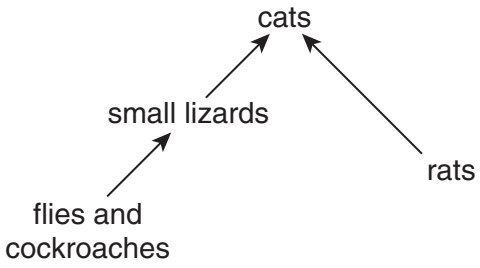
(b) In 1955 swamps and homes in North Borneo were sprayed with Dieldrin, a long-lasting pesticide, to eliminate the insect that causes malaria.



(i) Which insect were people aiming to kill with the pesticide spray?

.....[1]

(ii) The diagram shows part of the food chain in North Borneo.



rats have fleas which carry human diseases

What is the importance of small lizards in the food chain?

.....

.....[1]

(iii) The long-lasting pesticide spray killed many flies and cockroaches. Explain the effect that this would have on the cat population.

.....

.....[1]

(iv) Suggest why the changes in the cat population led to an increase in disease in the human population.

.....

.....[1]

(c) Human diseases are a greater problem in developing countries than in developed countries. What do you consider to be the main reasons for this?

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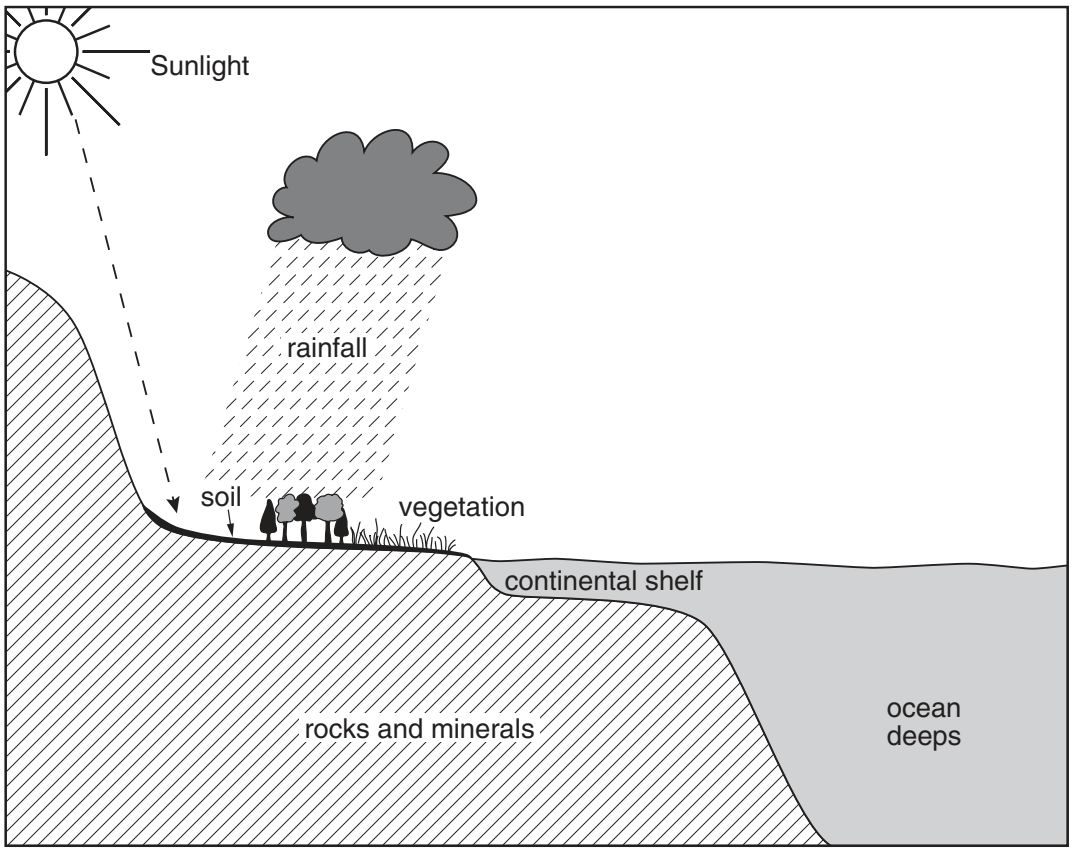
.....[3]

Section B

5 Look at the diagram below which shows some of the Earth's natural resources.



(a) Why are sunlight and rainfall essential to life on Earth?

.....

.....

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.....

.....

.....[4]

(b) Some examples of rocks commonly found near the Earth's surface are listed below.

basalt granite limestone marble sandstone slate

(i) From this list, name **one** example of each of the following types of rock.

Igneous .....

Sedimentary .....

Metamorphic .....[3]

(ii) Choose **one** of the rocks named and describe ways in which it is useful to people.

Name of rock, ...

Uses, ...

.....[2]

(iii) How is the formation of metamorphic rock different from igneous rock?

.....

.....

.....

.....[2]

(iv) State **one** way in which soil is different from rock.

.....

.....[1]

(c) The continental shelf is marked on the diagram.

(i) What is the continental shelf?

.....

.....[1]

(ii) Name **two** different types of natural resources obtained by people from continental shelves.

1 .....

2 .....[2]

(iii) Explain why people find it more difficult to exploit the natural resources of seas and oceans than those of the land.

.....

.....

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.....[3]

(d) Natural resources include coal, oil and natural gas.

(i) State **two** similarities of these three natural resources.

1 .....

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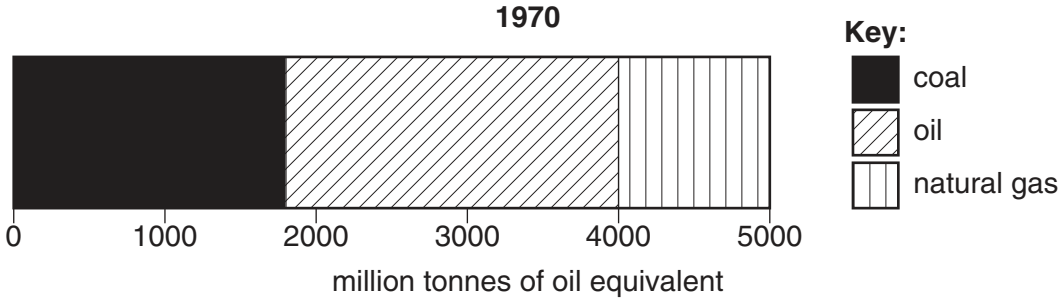
2 .....

.....[2]

(ii) The graph below shows amounts of coal, oil and natural gas consumed in the world in 1970.

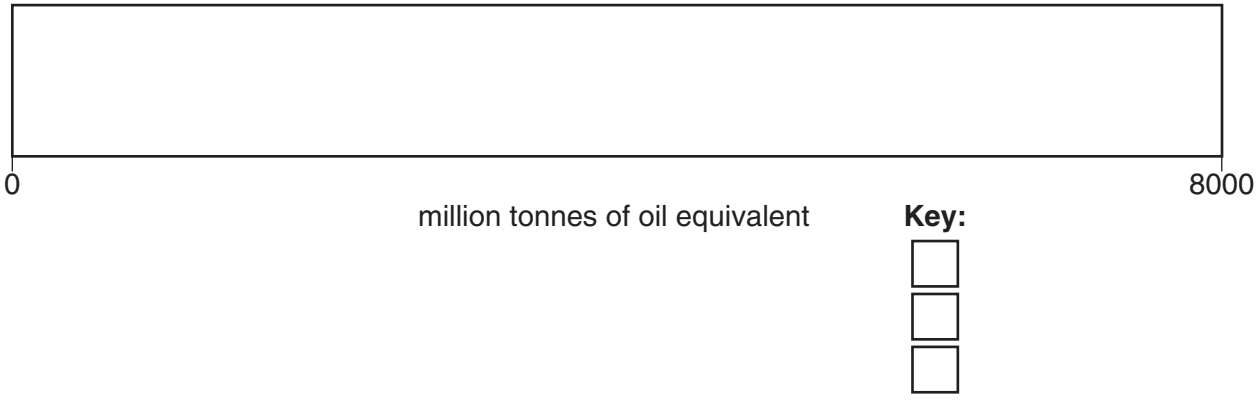


The amounts consumed in 2000 are given below.

resource	**amount** (million tonnes oil equivalent)
coal	**2200**
oil	**3500**
natural gas	**2300**

Draw another graph of the same type for 2000 in the space below.
Complete the key.

2000



[3]

(iii) State reasons why consumption of all three has increased, but for some more than others.

All three have increased, ...

.....

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.....

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Some more than others, ...

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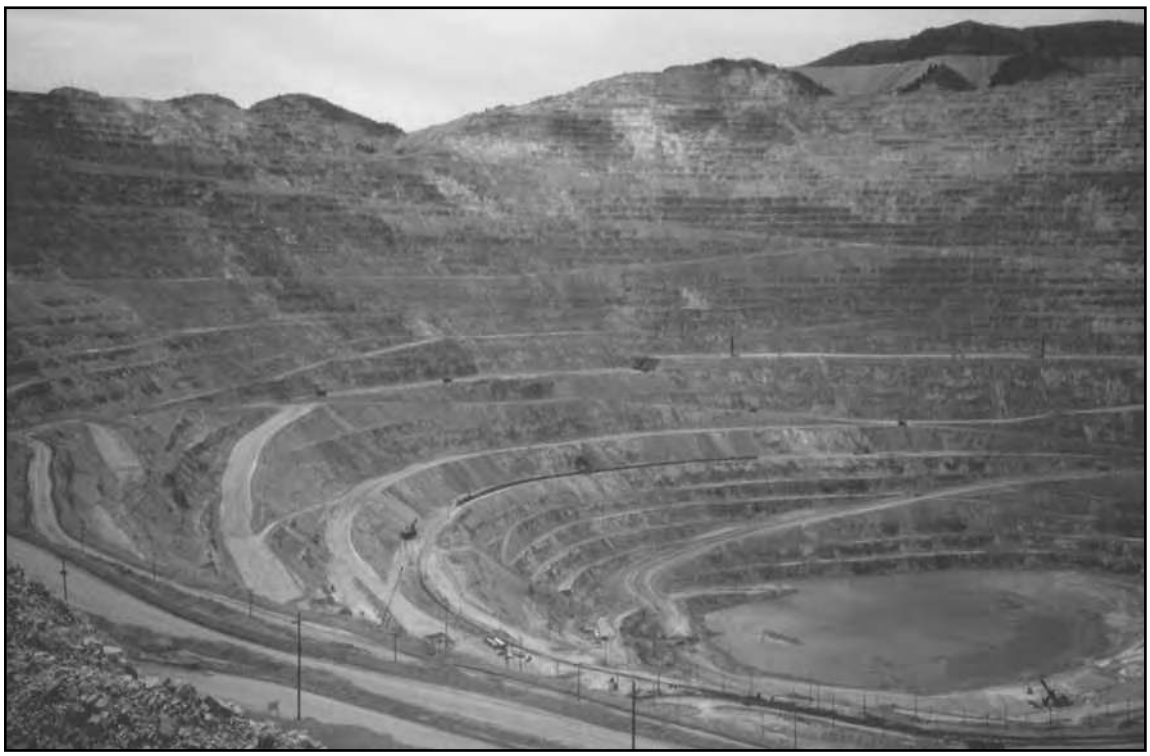
.....[6]

(e) Look at the photograph which shows a copper mine in the USA.



(i) Name the type of mining shown and describe the methods used in this type of mining.

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.....[3]

(ii) Known world reserves of copper will last for 55 years at present rates of use. Is the mining shown on the photograph an example of sustainable development? Explain your answer.

.....

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.....[2]

(f) **(i)** Name some of the strategies for conservation and management of the Earth's fuel and mineral resources.

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(ii) Explain some of the problems of putting such strategies into practice successfully.

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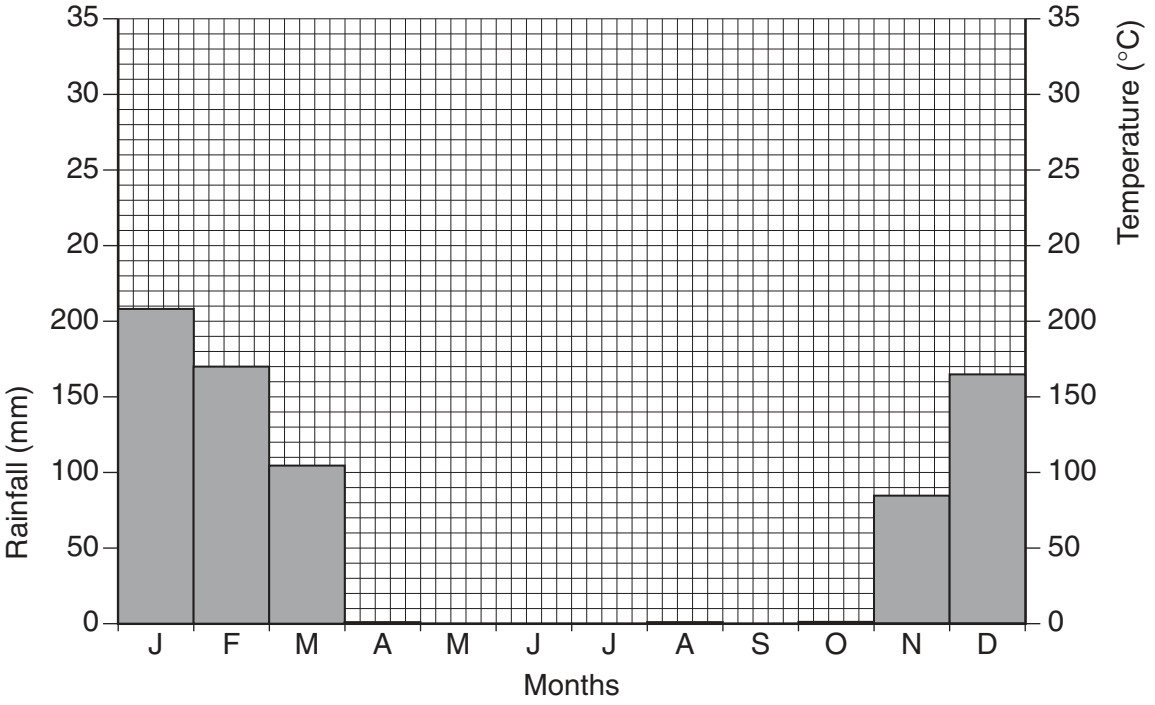
.....[6]

Total [40]

6 **(a)** Look at the climate graph for Zumbo in Mozambique (latitude 15°S).



(i) On this graph, plot and draw in a line to show the temperature values for Zumbo given below.

	J	F	M	A	M	J	J	A	S	O	N	D
°C	27	27	27	26	24	21	21	22	27	31	30	28

[3]

(ii) How do the temperatures show that Zumbo lies south of the Equator?

.....

.....[1]

(iii) Between which months is the dry season in Zumbo?

.....[1]

(iv) Name the type of tropical climate in Zumbo.

.....[1]

(v) At what time of the year are farmers living in the area around Zumbo likely to be most busy? Explain your answer.

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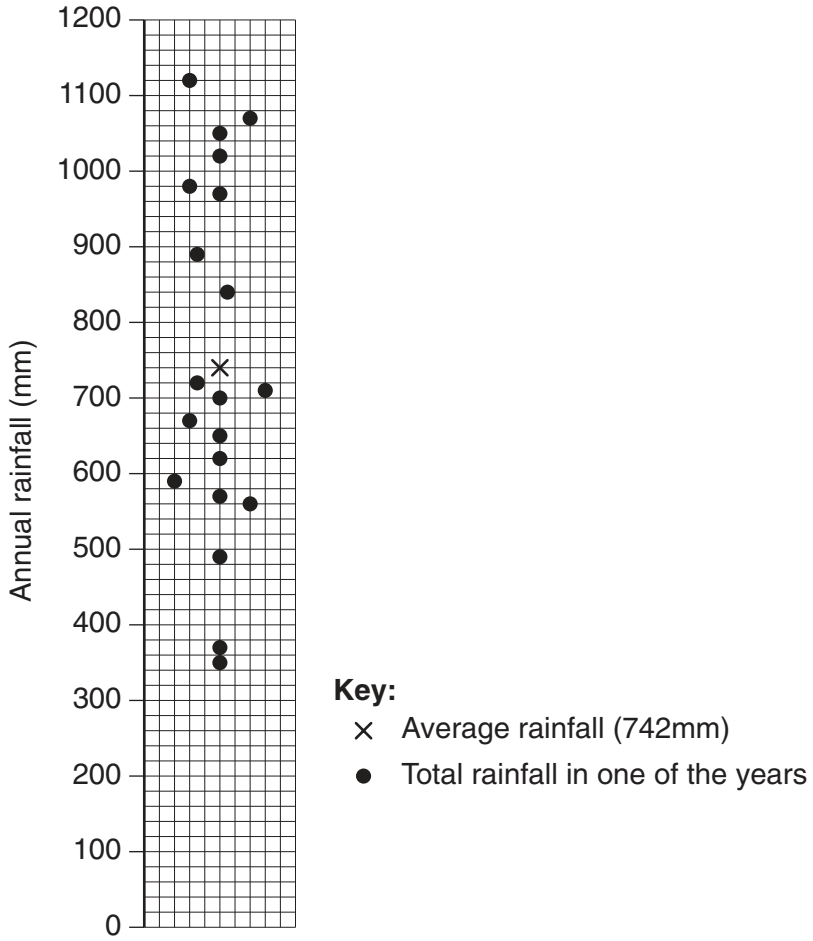
.....[3]

(b) Although the average total rainfall per year in Zumbo is 742mm, total rainfall varies greatly from year to year. Look at the graph below which shows totals of rainfall per year during a period of 20 years.



(i) State the highest and lowest totals of rainfall during the 20 years.

.....

.....[1]

(ii) Calculate the difference between them.

.....

.....[1]

(iii) Explain why in certain years there is a high risk of farming being disrupted by flooding.

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.....[2]

(iv) Describe how flooding can affect the health and income of farmers in tropical areas such as this.

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.....[3]

(v) Why is it likely that farmers around Zumbo need to use irrigation water in many years to obtain enough food? Quote values from the graph to support your answer.

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.....[2]

(vi) Name **one** area in the world where farmers use irrigation water to increase food output. Describe how the water is collected and used.

Name of area, ...

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.....[4]

(vii) Describe how collecting and using irrigation water can damage the environment.

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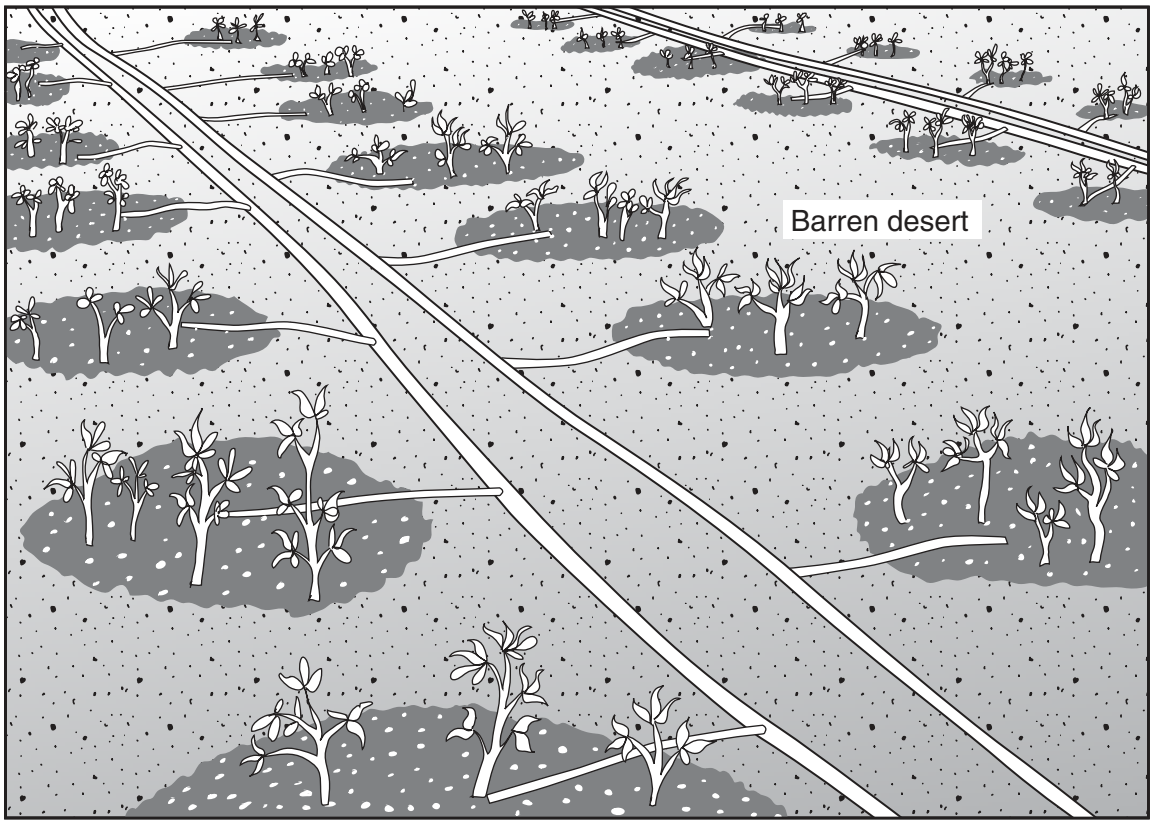
.....[3]

(viii) One of the more sustainable methods of irrigation is shown below.



Why is this method of irrigation better for the environment.?

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.....[2]

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(c) Some people believe that food output can be increased by genetic engineering to grow GM (genetically modified) crops. Some information about this is given below.

GM crops

What are they?

Scientists, mainly working in the USA, have transferred genes from one organism to another to create different plant varieties and new seeds for new varieties of crops. The three main GM crops are corn (maize), cotton and soya beans.

Where are they?

Over 50 million hectares of GM crops are grown in 13 countries around the world.

The highest percentages are grown in

- the USA (68%)
- Argentina (22%)
- Canada (6%)
- China (3%)

(i) How are seeds used for GM crops different from seeds that have been used by farmers for thousands of years?

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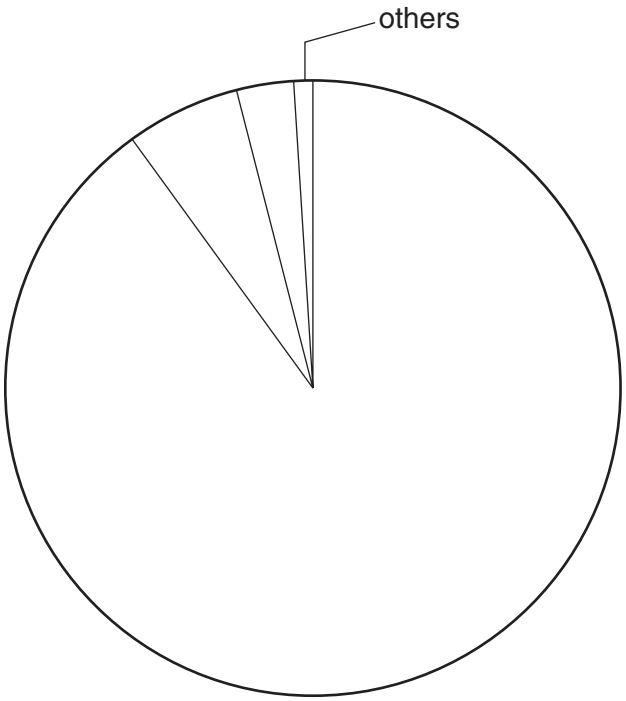
.....[2]

(ii) Complete the pie graph below for percentage growth of GM crops to show percentages for the USA and Argentina. Name the countries.



[2]

(iii) What percentage is grown in the nine countries shown as 'others' in the pie graph above?

.....[1]

(d) People hold different views about GM crops.

What do supporters of GM crops say?

• Higher food output and foods that can offer higher levels of nutrients and vitamins.

• Disease resistant, which means higher output and less pesticide use. (There is less leakage of chemicals into rivers and seas as well).

• Herbicide tolerant, which means that farmers can use weed killers and control weeds without damaging their crops.

• Hunger in developing countries will be reduced.

• More efficient use of existing farm land, so that fewer forests will need to be cleared in the future for new farm land.

One scientist says, *'The world cannot afford to miss the new opportunities created by new scientific discoveries and technologies'*.

What do people opposed to GM crops say?

• It is dangerous to use genetic engineering to create plant and animal varieties that could not have been created in nature.

• This may create 'super weeds' without controls, replacing existing varieties of plants and animals from the ecosystem and reducing biodiversity.

• Use of natural crop varieties will be reduced, also reducing biodiversity.

• Greater use of herbicides (weed killers) will result in a higher concentration of chemicals in food and water run off from the land.

• Increases in food output have not been as great as supporters have claimed.

One environmentalist says, *'New organisms can never be removed from the environment once they have been created, so that these scientists are gambling with the natural world'*.

(i) Explain why the scientist and the environmentalist hold different views about GM crops.

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(ii) Who do you agree with most? Explain your answer.

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.....[4]

Total [40]

Total for paper [80]

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