Centre Number	Candidate Number	Name

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

ENVIRONMENTAL MANAGEMENT **5014/01**

Paper 1

May/June 2005

2 hours 15 minutes

Candidates answer on the Question Paper.
Additional Materials: Ruler (cm/mm)

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

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.

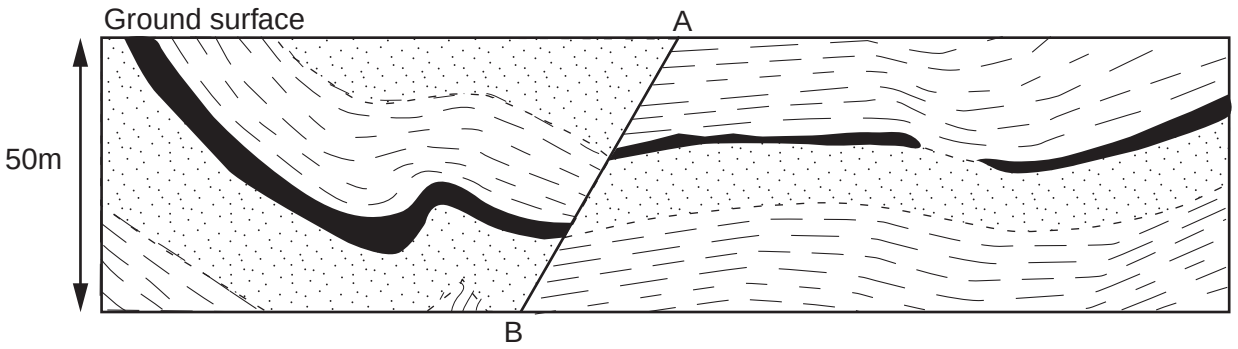
Stick your personal label here, if provided.

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

This document consists of **23** printed pages and **1** blank page.

Section A

1 **(a)** The diagram shows a coal seam.



Key:

- coal seam
- sandstone
- shale
- – – – boundary between rock types

(i) What is the structure shown by the line A-B?

.....[1]

(ii) Describe the problems of extracting coal from the seam shown.

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.....[3]

(iii) Circle the words that complete these sentences:

The rocks on the diagram are	igneous metamorphic sedimentary
The diagram shows part of the Earth's	core crust mantle
The coal was formed from	savanna grassland temperate forest/taiga tropical swamp forest

[3]

(b) Why might permission be given to start a new mine in an agricultural area, even local people object to it?

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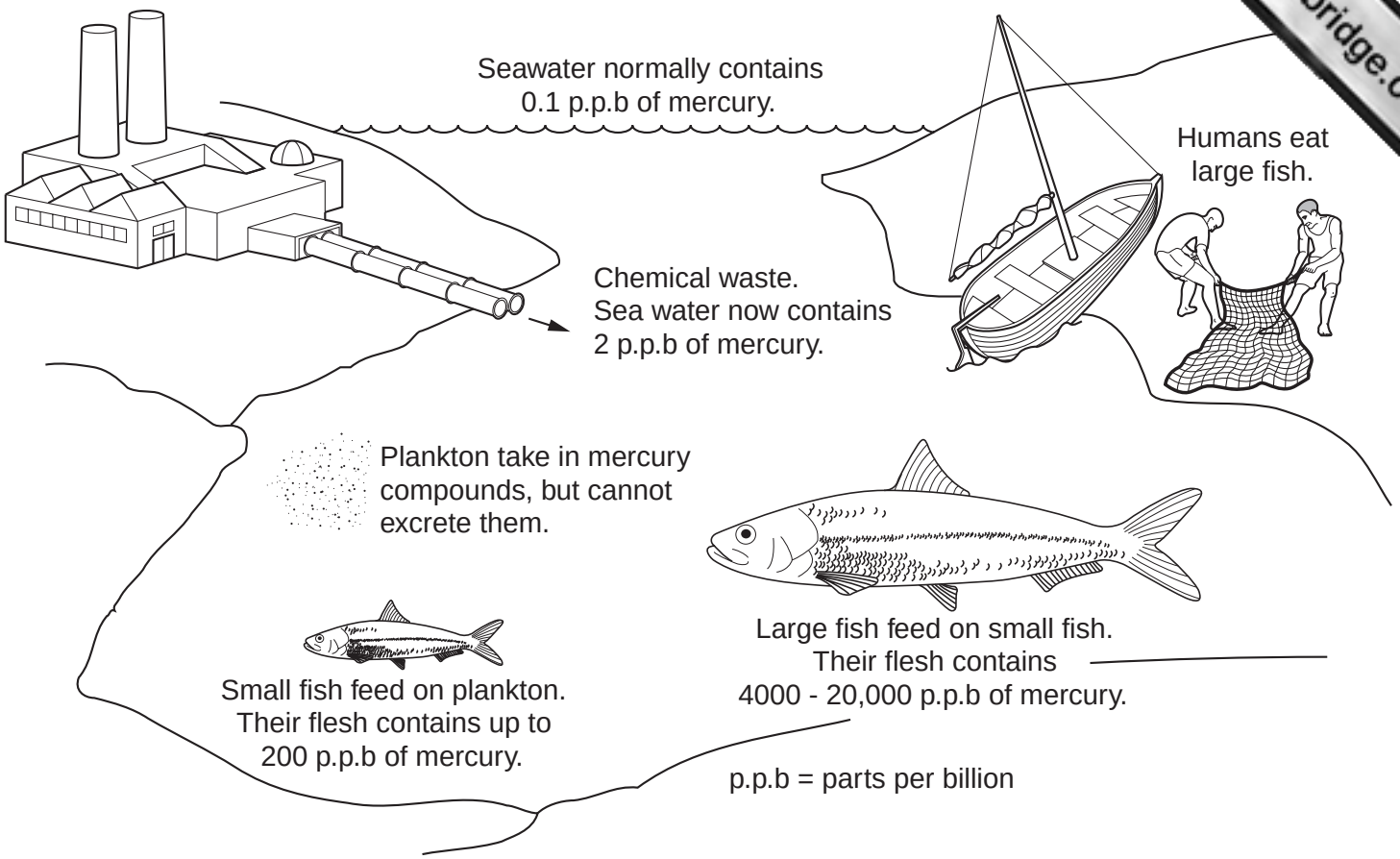
.....[3]

[Total: 10]

2 **(a)** The diagram shows marine pollution.



(i) Why is the amount of mercury so much greater in the bodies of small fish than it is in polluted seawater?

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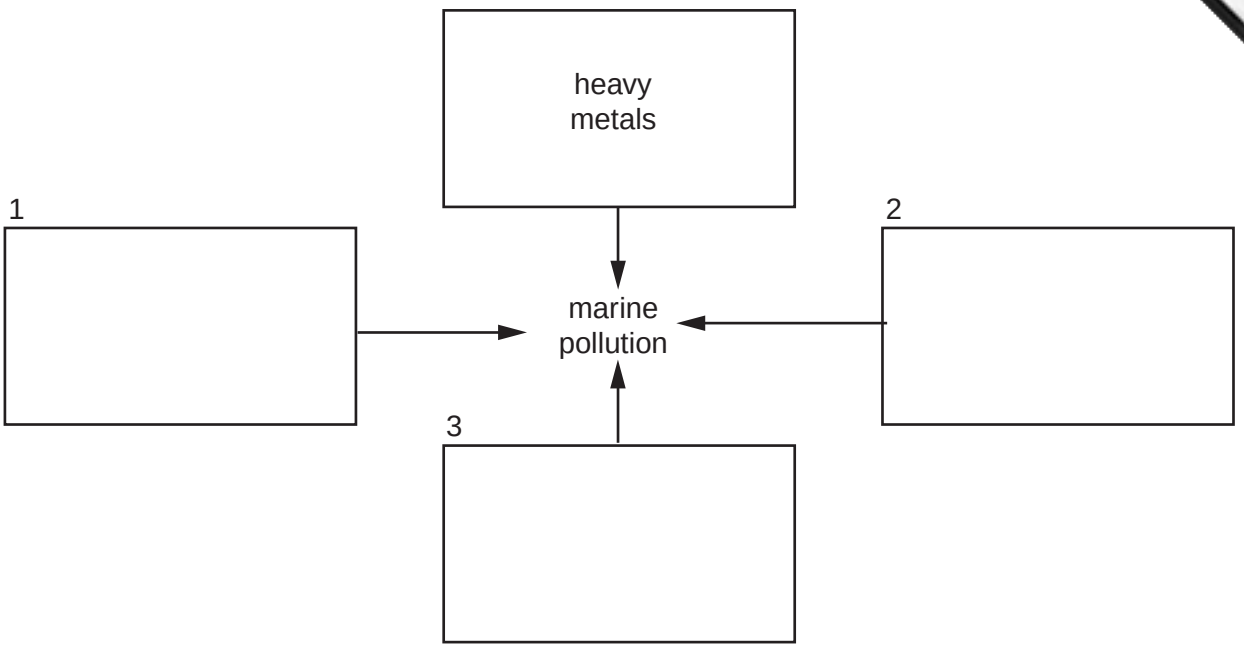
.....[2]

(ii) Draw the food chain described in the diagram.

[1]

(b) (i) The diagram below shows one type of marine pollutant.



Three different types of pollutant are described in the table.

box number	description of marine pollutant
1	provides energy for transport but accidental spills occur
2	a material used only in the last 30 years for packaging and items such as drinks containers
3	an output from humans that is sometimes untreated

In the correct numbered box on the diagram, write the type of pollutant described in the table. [2]

(ii) State ways in which pollution affects coastal zones.

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.....[2]

(c) Suggest why attempts to control marine pollution need international cooperation.

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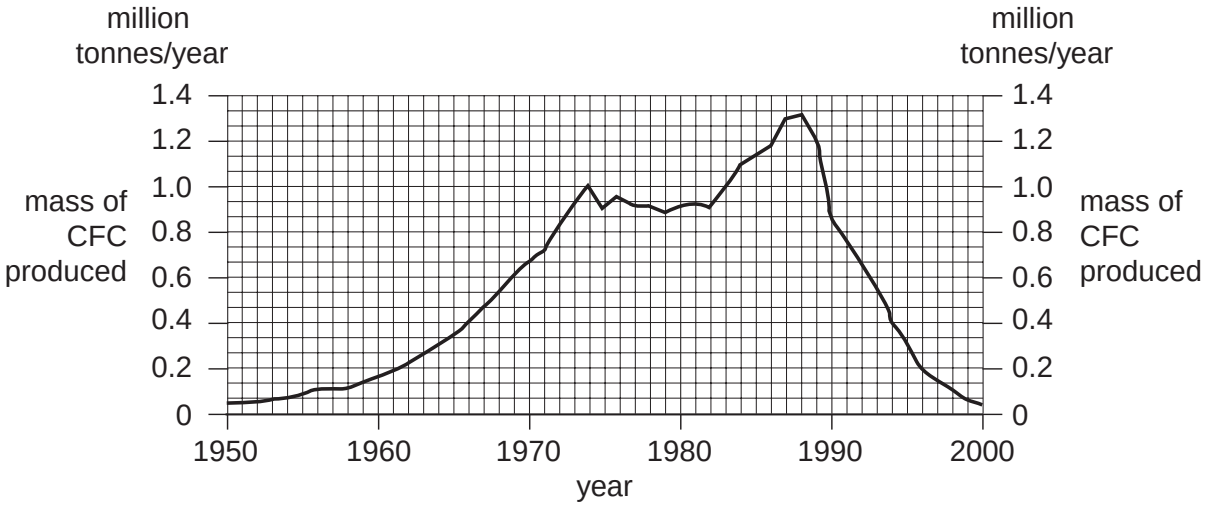
.....[3]

[Total: 10]

3 **(a)** Name one source of CFCs (chlorofluorocarbons) in the atmosphere.

.....[1]

(b) The graph shows world production of CFCs.



(i) Describe, quoting data, world production of CFCs between 1950 and 2000.

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.....[3]

(ii) Why has the production of CFCs decreased?

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.....[3]

(c) Suggest how scientists and governments can play a part in reducing the use of [illegible] chemicals.

.....

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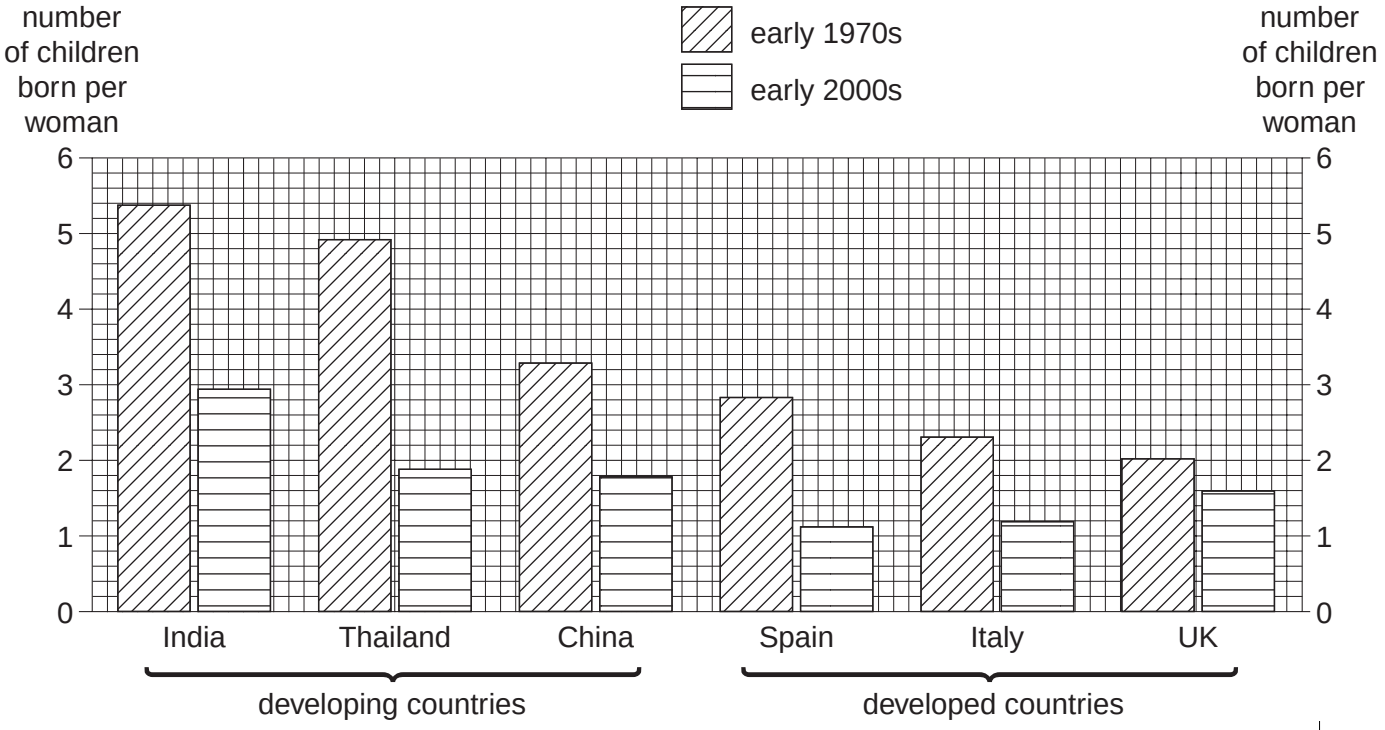
.....[3]

[Total: 10]

4 **(a)** The bar graphs show changes in fertility rates in six countries.



(i) In which country has the fertility rate decreased by the largest amount?

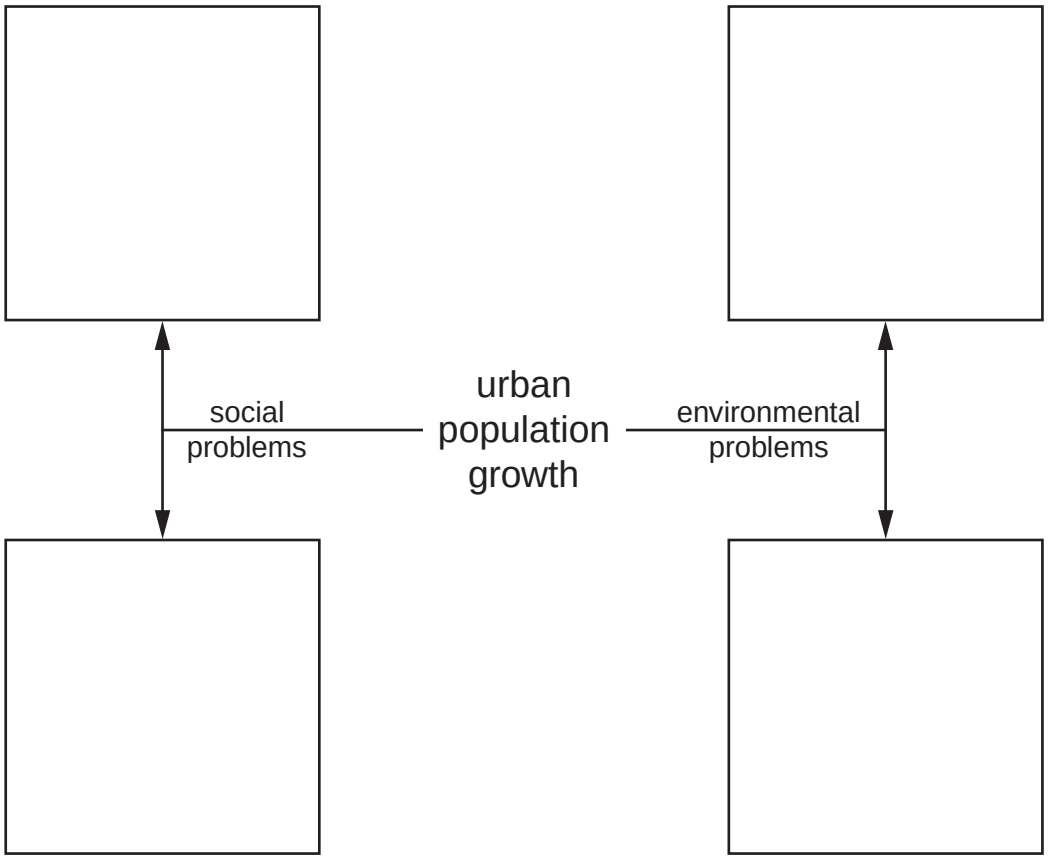
.....[1]

(ii) Compare the fertility rates in developing and developed countries.

.....

.....[1]

(b) Many new homes are to be built in cities in the state of Guangdong in Southern
These cities already have a high density of population. Population growth can lea
social and environmental problems.
Complete the diagram by inserting one problem in each box.



[4]

(c) Suggest how developing countries could cope with large increases of population in urban areas.

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.....[4]

[Total: 10]

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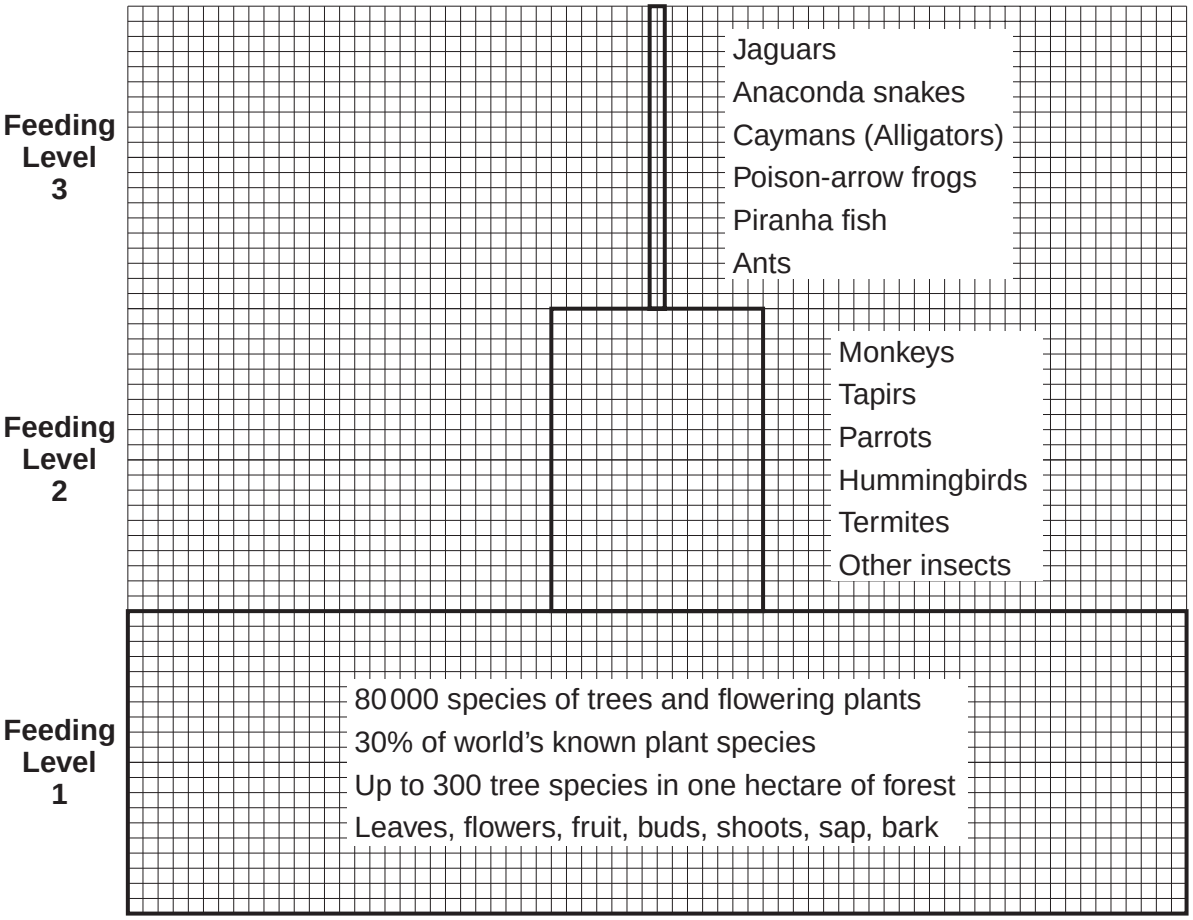
Section B

5 The diagram below contains information about the tropical rainforest in the Amazon Basin in Brazil.



(a) (i) Choose **two** pieces of information from the diagram to show the great biodiversity of the Amazon rainforest.

1 .....

2 .....[2]

(ii) Describe **one** way in which biodiversity is a useful resource for people.

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.....[2]

(b) Three feeding levels are marked on the diagram.

(i) How are the organisms named in feeding level one different from those named in levels two and three?

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.....[2]

(ii) State **one** difference and **one** similarity between the organisms named in levels two and three.

Difference .....

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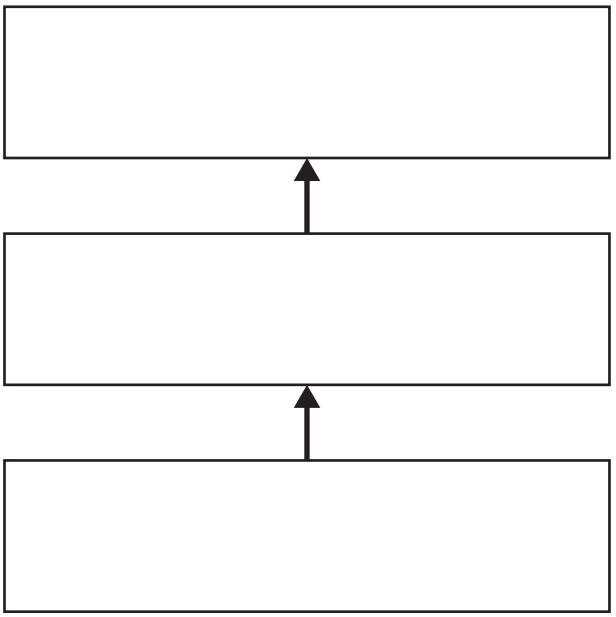
Similarity .....

.....[2]

(iii) Complete the diagram below to show one food chain in the Amazon rainforest.



[2]

(iv) How and why are amounts of biomass different at each feeding level?

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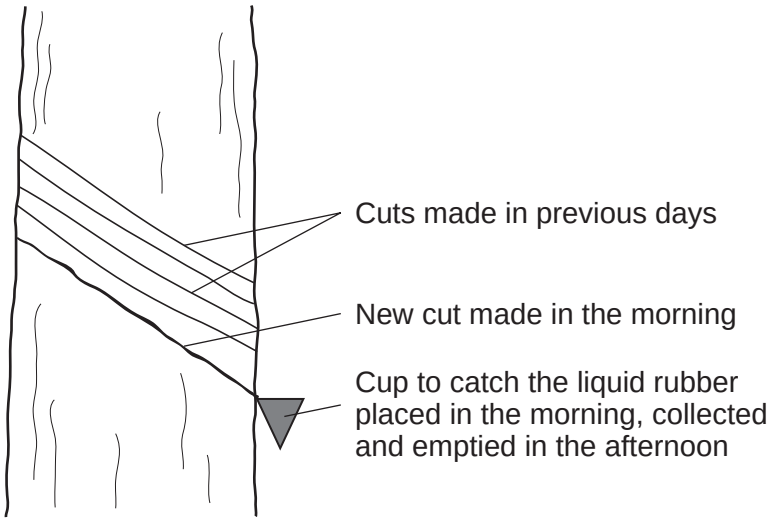
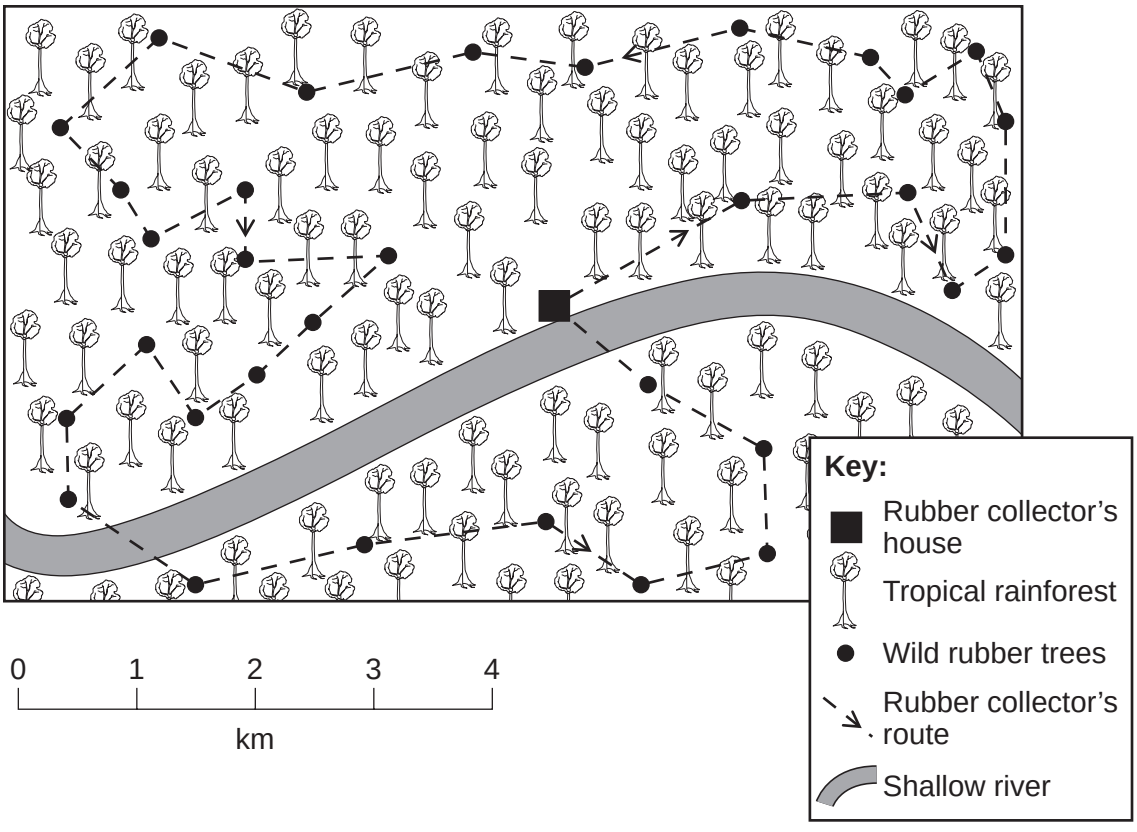
.....[3]

(c) Some people in the Amazon rainforest in Brazil make a living by collecting wild r
Look at the sketch and map below.



Map



(i) Describe the daily pattern of work for a collector of wild rubber.

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.....[1]

(ii) Explain why collecting wild rubber is an example of a sustainable forest acti

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.....[4]

(iii) Suggest **two** problems for the rubber collectors trying to make a living in this way.

1 .....

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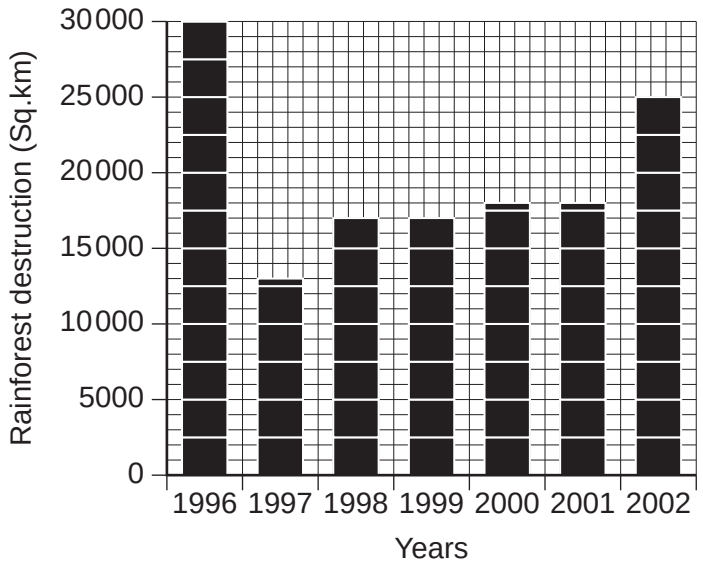
2 .....

.....[2]

(d) Amount of Amazon rainforest destroyed in Brazil

Rainforest destruction in the Amazon Basin 1996 – 2002



Environmentalists were very pleased in 1997, but very disappointed in 2002. Use values from the graph to explain why.

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.....[3]

(e) More information about Brazil and its rainforests is given below.

Brazil

- Size - the world's 5th. largest country
- Area - 8.5 million square kilometres
- Natural vegetation - rainforest in 60% of the country
- Rainforest clearance - 16% of the area of natural forest

One view about Brazil and its rainforests is stated below.
'The area of rainforest is still massive in Brazil. There is no need to be concerned about its disappearance.'

Explain how the information given about Brazil and its rainforests could be used to support this statement.

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.....[2]

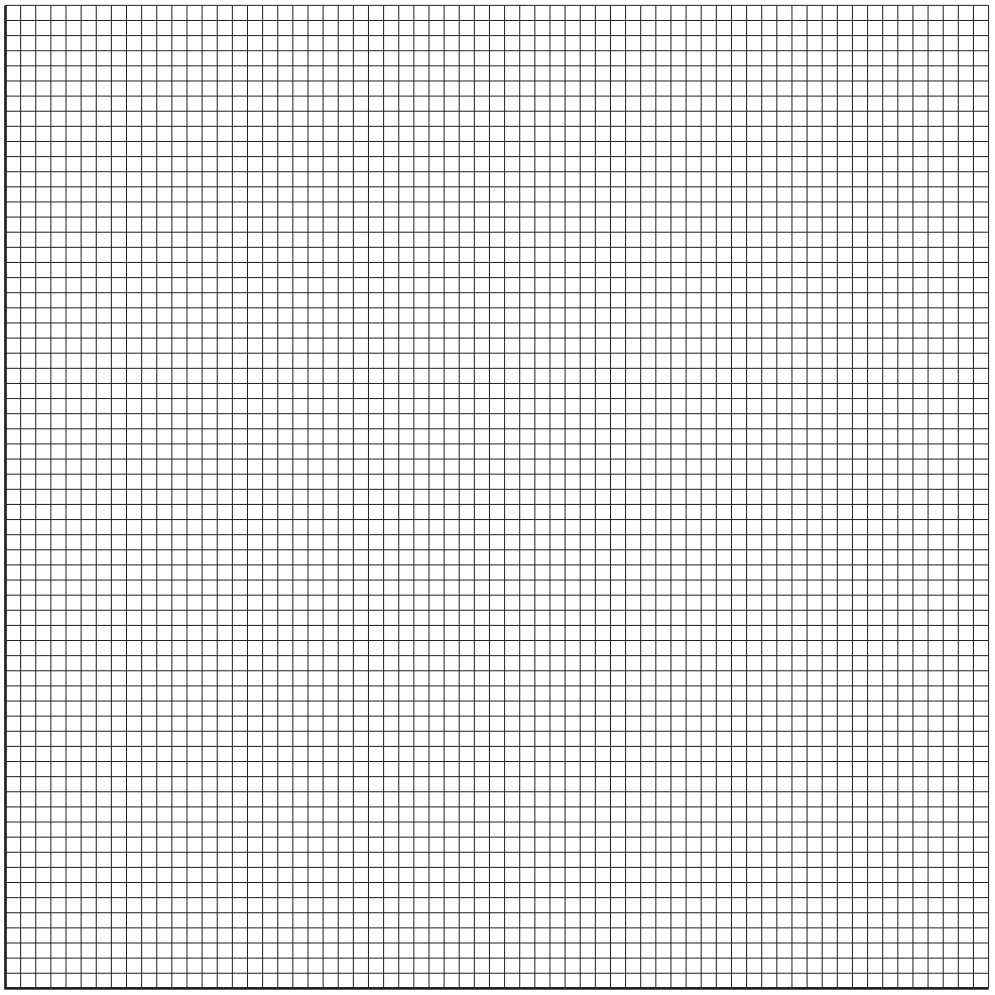
(f) Total population in Brazil (past and expected) is shown in the table below.

Total population of Brazil

Year	1950	1960	1970	1980	1990	2000	2010	2020
Population (millions)	55	75	95	120	150	170	E190	E210

E = expected in future

Draw a line graph to show population in Brazil (past and expected).



[4]

(g) Read the report below.

Reasons for forest destruction

1 Economic

The forest has been destroyed to allow economic development, such as logging, mining and, most of all, farming. Large areas are used for cattle ranching. However, much of the recent advance of agriculture into the south and east has been by farmers growing soya beans. This crop offers farmers large profits. Most of the soya crop is exported to Europe where it is used for animal feed. This has boosted Brazil's export earnings and helped to pay off some of the country's massive debts. Brazil is expected to overtake the USA as the world's leading producer of soya beans in a few years time.

2 Social

Most Brazilian farmers are landless. Land in the old settled areas of Brazil is divided up into large estates, owned and operated by rich landlords. Only on the new lands in the Amazon is there a chance of peasant farmers working land that they own. Families are still large in the rural areas of Brazil and there is great population pressure where land is suitable for farming. There is much rural poverty. Most farmers have given up hope of the government introducing a programme of land reform dividing up the large estates and sharing out land among the estate workers.

(i) From the report, state **one** economic and **one** social problem in Brazil.

Economic problem .....

Social problem .....

(ii) Explain how rainforest clearance might reduce these problems.

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.....[5]

(v) Two views about clearing the Amazon rainforest in Brazil are given below.

'Brazil's population continues to grow. Clearing rainforest is the only way of solvi Brazil's great economic and social problems.'

'We are in danger of losing the most species-rich environment on Earth. The Amazon is the great green lung of the world.'

Decide which view is better in your opinion and explain why.

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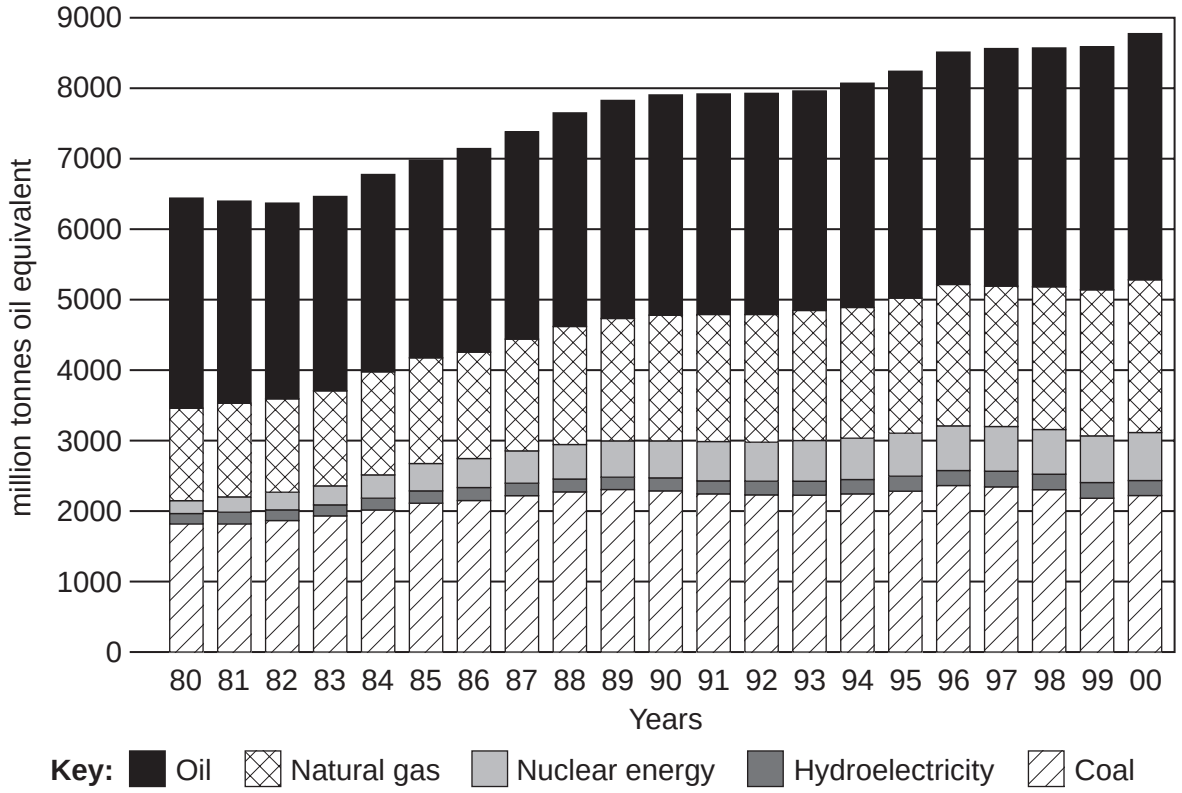
.....[6]

[Total: 40]

6 **(a)** Look at the graph which shows world consumption of the five main commercial s
of energy from 1980 to 2000.



(i) List the five energy sources in **1990** in order of amount used (from highest to lowest).

Highest 1.....

2 .....

3 .....

4 .....

Lowest 5 ..... [1]

(ii) The total amount of energy used increased from 1980 to 2000. State values from the graph to support this.

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.....[2]

(iii) The pattern of total energy consumption shows a few years without much growth followed by several years with faster growth.
In which five year period did the total amount of energy consumed increase the most?

[1]

(iv) State **three** reasons for increased energy consumption from 1980 to 2000.

1 .....

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2 .....

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3 .....

.....[3]

(v) Describe how the graph shows the world's great dependence upon fossil fuels.

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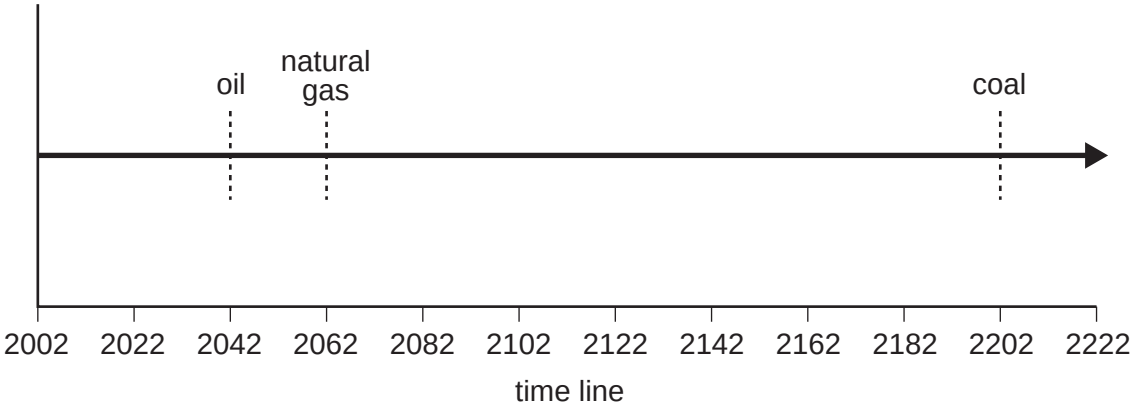
.....[3]

(b) Information about fossil fuels in 2002

	Annual production (thousands million tonnes of oil equivalent)	Known reserves (thousands million tonnes of oil equivalent)
Oil	35.5	1420
Natural gas	23.0	1380
Coal	24.0	4800

The number of years from 2002 that fossil fuels are expected to last.



(i) How many times longer is coal expected to last than oil?

.....[1]

(ii) What is meant by the 'known reserves' of a mineral?

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.....[2]

(iii) How was the value for the number of years that oil was expected to last worked out?

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.....[1]

(iv) Look back at the graph of total world energy consumption (page 18).
What percentage of total energy consumption in 2000 came from coal?

.....[1]

(v) Known reserves of coal are greater than those of oil.
Less coal is used per year than oil.
Explain why less coal is produced and used each year than oil? Use the heading below for your answers.

A Mining coal compared with extracting oil

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B Using coal compared with using oil

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C Environmental problems from burning coal compared with burning oil

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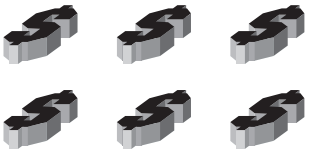
.....[6]

(c) Look at the diagram which shows how people, energy use and oil reserves we between developed and developing countries in 2002.

	Developed countries	Developing countries
Total world population		
Energy use		
Proved oil reserves		
Average income per head		

(i) Total world population

Developed countries 1 billion

Developing countries 5 billion

Choose a suitable symbol and complete the diagram. [1]

(ii) Describe what the diagram shows about present energy use in the world.

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.....[2]

(iii) Some developed countries are becoming concerned about their future supplies. Does the information in the diagram support these concerns? Explain fully as you can.

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.....[4]

(d) Future energy supplies

Strategies to ensure future energy supplies

A – Greater energy conservation

B – Increased use of alternative energy sources (solar, wind, geothermal, hydroelectric and biomass)

(i) What is meant by energy conservation?

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(ii) Describe **one** method of energy conservation. How successful is it for energy conservation?

Description .....

.....

.....

How successful? .....

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.....[4]

(iii) Write about some of the **disadvantages** of alternative energy sources for energy supplies.

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.....[5]

(iv) In your view, for which one of the named alternative energy sources is there the best chance of increased output in the future? Explain your choice.

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.....[3]

[Total: 40]

[Total for paper: 120]