UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

ENVIRONMENTAL MANAGEMENT **5014/12**

Paper 1 **October/November 2012**

2 hours 15 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 **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.

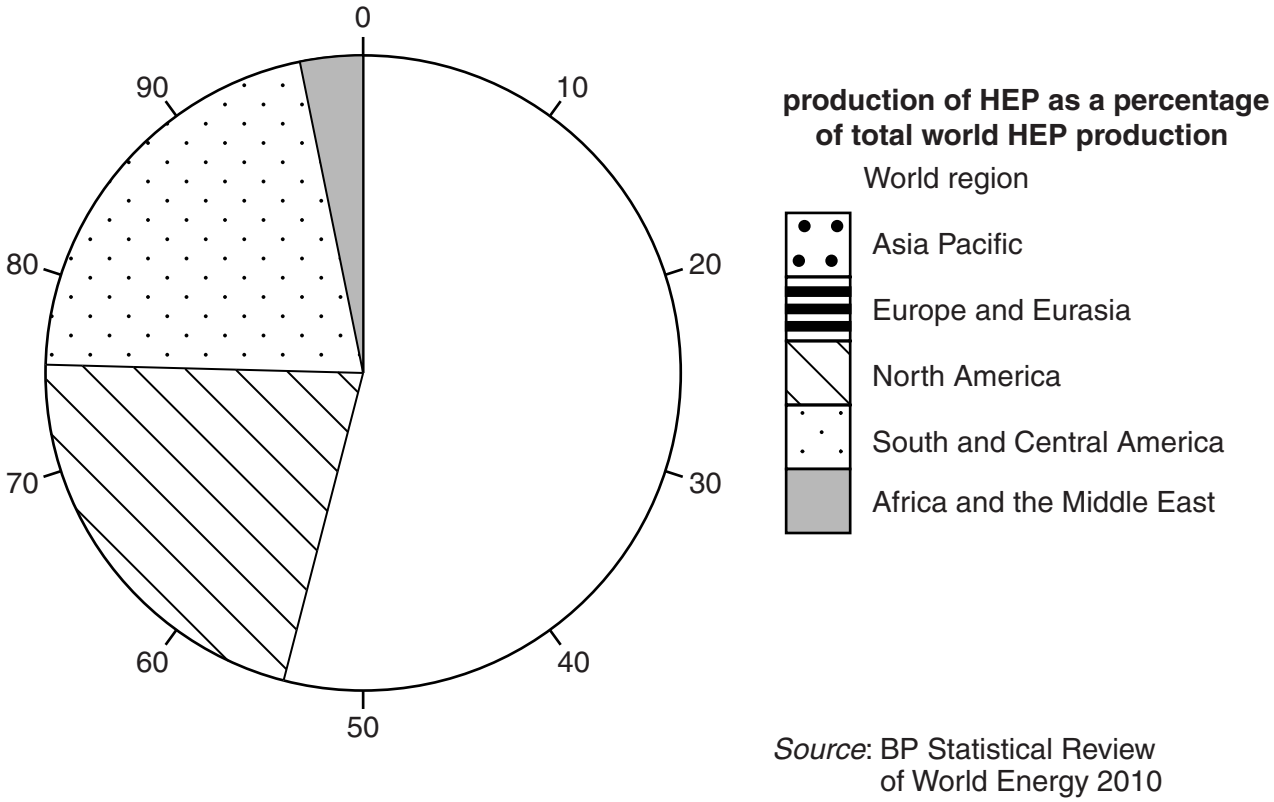
For Examiner's Use	
1	
2	
3	
4	
5	
6	
Total	

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

Section A

For Examiner's Use

1 **(a)** Look at the pie chart showing production of HEP (hydro-electric power) in regions of the world in 2009 as a percentage of total world HEP production.



Source: BP Statistical Review of World Energy 2010

(i) Complete the pie chart by using the percentages in the table.

region	production of HEP as a percentage of total world HEP production
Asia Pacific	29
Europe and Eurasia	25

[2]

(ii) State the approximate percentage for the region which produces the least HEP.

..... %

[1]

(b) Complete the table to show conditions which favour HEP production. Write a favourable condition in each box.

For Examiner's Use

factor	favourable conditions for the production of HEP
relief (height, slope, shape of land)	....
rivers and lakes	....
geology (nature of the rocks)	....
weather and climate	....

[4]

(c) Why might people object to plans for a new HEP scheme in their area?

.....

.....

.....

.....

.....

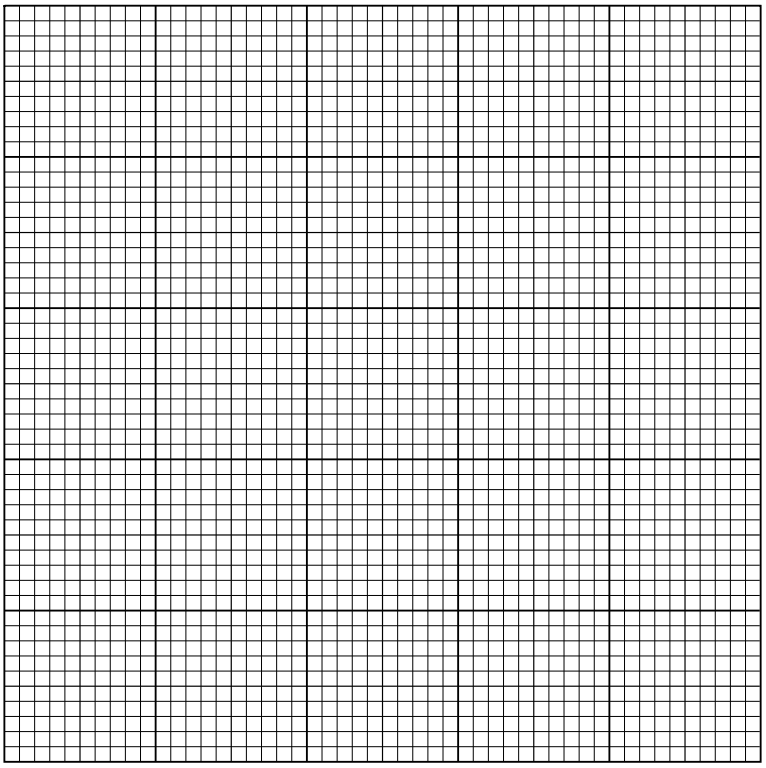
.....[3]

2 **(a)** The total weight of fish actually caught in the world's seas is believed to be much greater than the catch that is recorded. The table gives estimated information about this for 2010.

For Examiner's Use

recorded fish catch/tonnes	estimated fish catch from • subsistence fishing • by-catch (fish caught during commercial fishing and thrown away) • illegal fishing /tonnes	total recorded and estimated fish catch/tonnes
90 million	150 million	240 million

(i) Draw a bar graph to show the information in the table.



[2]

For Examiner's Use

(ii) Suggest how regulations for commercial fishing can result in fish being thrown away.

.....

.....

.....

.....[2]

(b) (i) Explain why subsistence fishing is an important activity in many parts of the world.

.....

.....

.....

.....[2]

(ii) Why is it difficult to prevent illegal fishing?

.....

.....[1]

(c) Explain how problems are caused by overfishing.

.....

.....

.....

.....

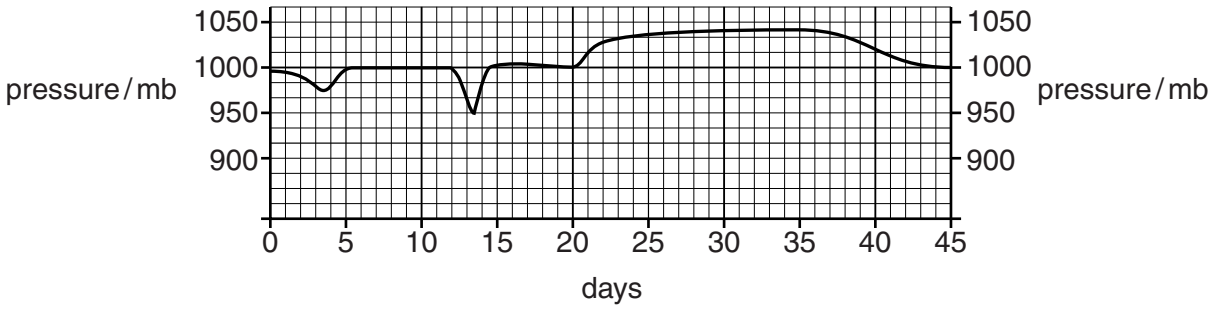
.....

.....[3]

3 **(a)** Circle the name of the instrument used to measure atmospheric pressure.

anemometer barometer hygrometer Six's thermometer [1]

(b) Look at the graph, which shows pressure recordings over 45 days at a tropical weather station.



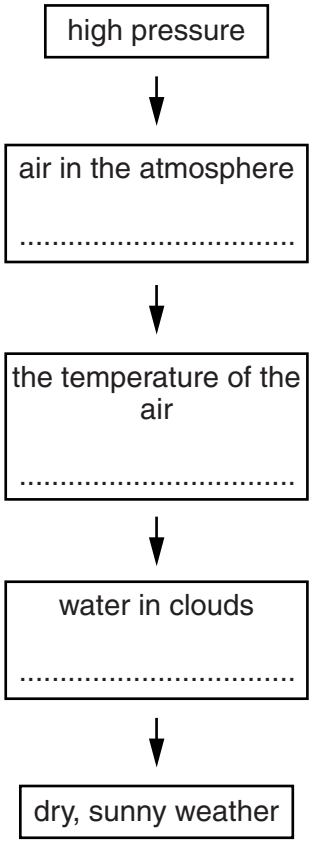
State on which days the area was affected by:

(i) a cyclone .....

(ii) a period with high pressure ..... [2]

(c) **(i)** Complete the flow diagram to show why high pressure often leads to dry, sunny weather, using the 3 correct words from the list:

condenses cools evaporates rises sinks warms



[3]

(ii) Describe the difficulties which long periods of drought may cause for people living in rural areas without access to water supplies.

For Examiner's Use

.....

.....

.....

.....

.....

.....

.....

.....[4]

4 Look at the table, which gives information about Honduras and Sweden.

fact	Honduras	Sweden
percentage population growth rate	2.0	0.2
percentage of population 0–14 years	38	16
percentage of population 15–64 years	58	66
percentage of population 65 years and over	4	18
annual average income per person (US$)	4100	36 600
percentage of population below the poverty level	59	0

(a) How many times greater is the population growth rate in Honduras than in Sweden?

.....[1]

(b) Use the information in the table to explain why the population pyramid of Honduras will have a wide base and a triangular shape.

.....

.....

.....

.....

.....

.....

.....

.....[4]

(c) Explain why Sweden's population structure might lead to problems now and in the future.

For Examiner's Use

.....

.....

.....

.....

.....

.....[3]

(d) State **two** different ways in which richer countries could help to reduce the problems which result from poverty in countries like Honduras.

1. .....

.....

2. .....

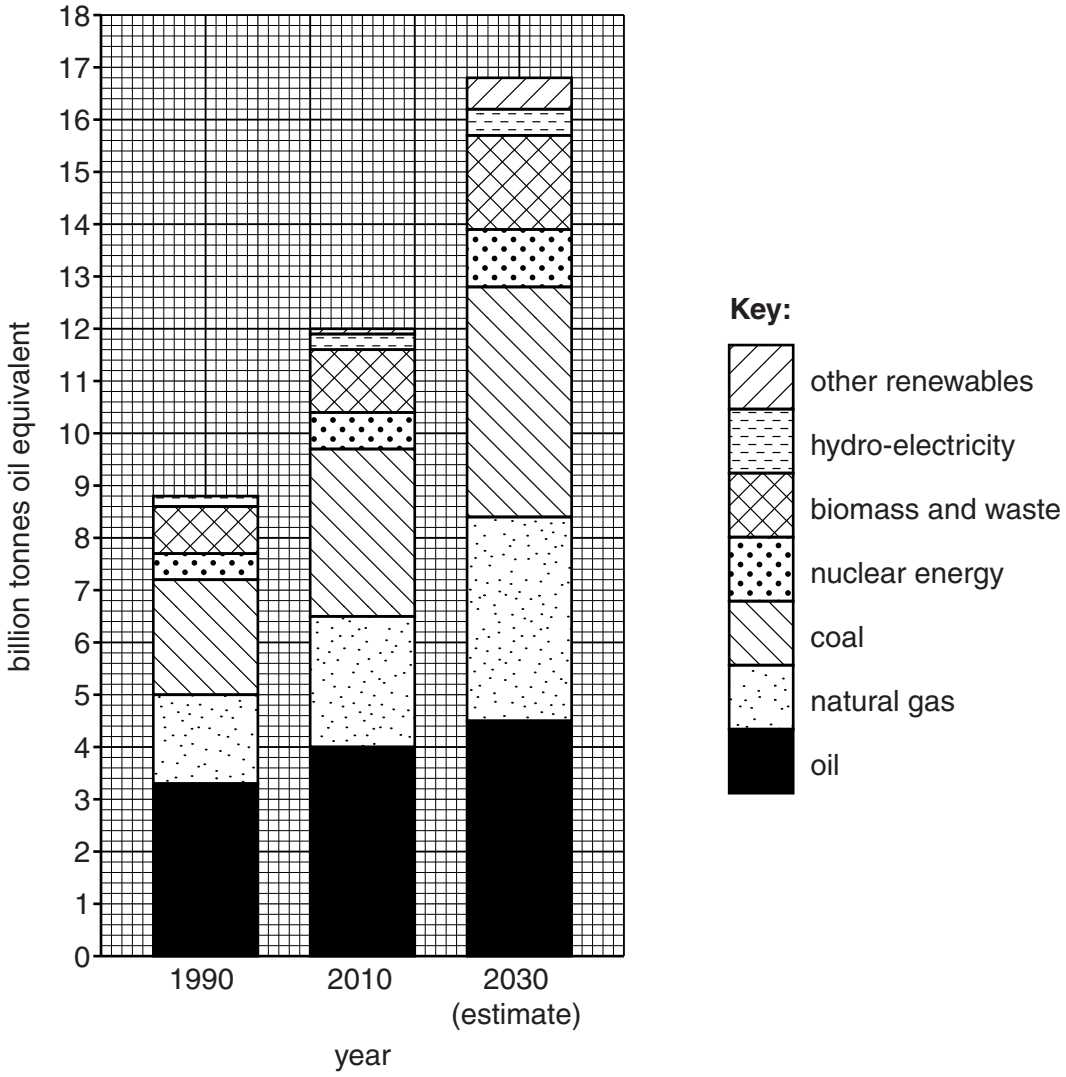
.....[2]

Section B

For Examiner's Use

5 **(a)** Look at the graph which shows world energy demand by type for 1990 and 2010, with an estimate for 2030.

World energy demand 1990, 2010 and an estimate for 2030



(i) What was the total world energy demand in 2010 (in billion tonnes of oil equivalent)?

..... [1]

(ii) By how many billion tonnes did total world energy demand increase between 1990 and 2010?

..... [1]

(iii) Describe what the graph shows about the importance of oil in the past, now and in the future.

.....

.....

.....

.....

.....

..... [3]

(b) The world in 2010 depended on oil for:

- 90% of its transport needs,
- 10% of electricity production.

Explain why world dependence on oil

(i) is so high for transport,

.....

.....

.....

..... [2]

(ii) is much lower for electricity.

.....

.....

.....

.....

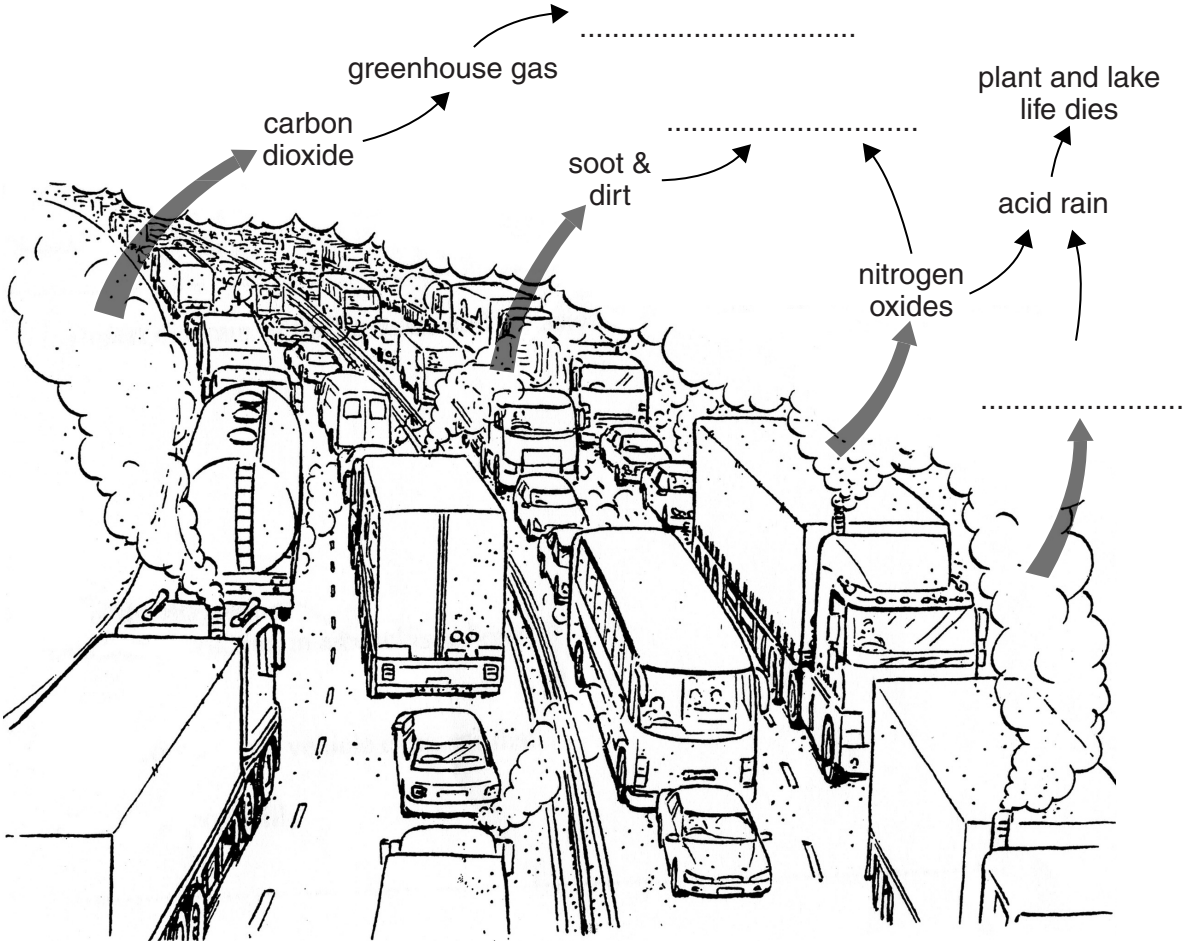
.....

..... [3]

(c) Unfortunately cars, trucks and buses are major causes of atmospheric pollution.

For Examiner's Use

The sketch below shows the materials that come from vehicle exhausts and some of the effects that they cause.



Three labels are missing from the sketch. The information below will enable you to write in suitable labels to complete the sketch.

On the sketch, write in the missing labels for:

(i) the effect of carbon dioxide emissions,

(ii) one effect on people of emissions of soot, dirt and nitrogen oxides,

(iii) another gas that causes acid rain.

[3]

(iv) Explain how the atmospheric pollution from vehicle exhausts shown on the sketch has effects which are local, international and global.

For Examiner's Use

.....

.....

.....

.....

.....

.....

.....

..... [4]

(v) Look at this message which was displayed on the side of a bus in Dubai, part of the UAE in the oil-rich Middle East.

This bus is more environmentally friendly than a car

40 cars = 230,000 kg of CO_2 per year ✗

This bus = 3,200 kg of CO_2 per year ✓

What is the message? What is the government of Dubai trying to persuade people to do?

.....

.....

.....

..... [2]

(vi) Describe another way in which air pollution from traffic can be reduced.

.....

.....

.....

..... [2]

(d) Atmospheric pollution is a much greater problem in some countries and cities than in others.

For Examiner's Use

(i) Name a country or city where air pollution is a major problem, with high levels frequently recorded.

.....

(ii) Give reasons why air pollution levels are higher in the country or city named in **(d)(i)** than in most other places.

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [5]

(e) Pressure is increasing on all governments to reduce their dependence on oil and other fossil fuels.

(i) Look back to the graph in part **(a)** on page **10**. Describe what the estimate for 2030 shows about how important the use of fossil fuels is expected to be, compared with what it was in 1990 and 2010.

.....

.....

.....

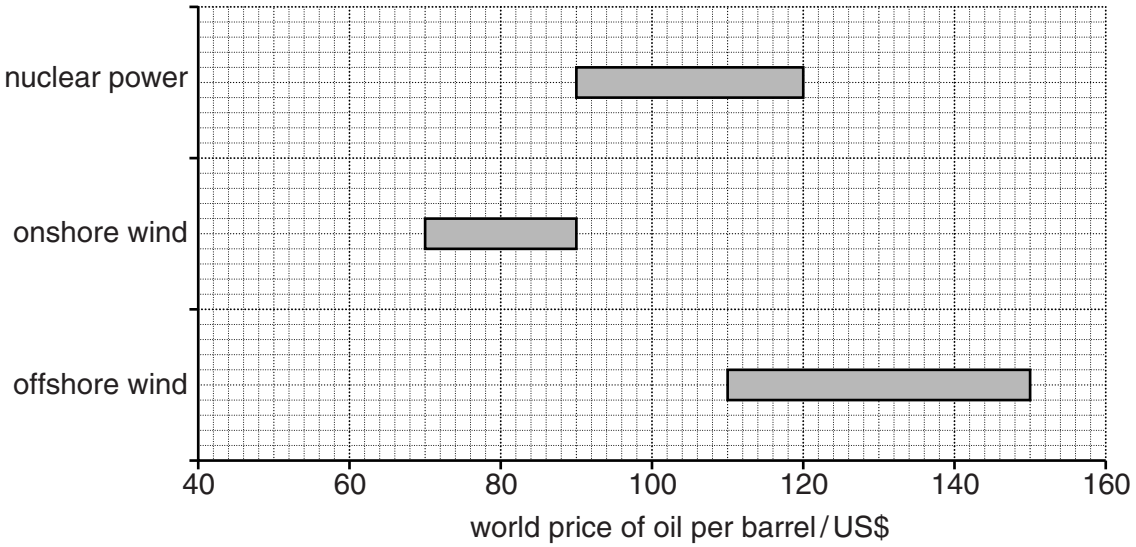
.....

.....

..... [3]

(ii) Look at the graph which shows costs of producing electricity from newly built power stations in relation to world oil prices. The higher the oil price, the more economic it becomes to build electricity power stations using other energy sources.

For Examiner's Use



In August 2010 the average world price of oil was US$75 per barrel.

Draw a vertical line down the graph to show the world oil price in August 2010. [1]

(iii) Suggest reasons why a range of costs (instead of just one) is given for the production of electricity from wind and nuclear power to produce electricity.

.....

.....

.....

..... [2]

(iv) How likely were governments and companies to start building new electricity power stations in 2010 using wind and nuclear power? Explain your answer, using both the graph and your knowledge of wind and nuclear power.

.....

.....

.....

.....

.....

.....

.....

..... [4]

(f) A student was asked to assess the costs and benefits of one type of energy. The results are given below.

Energy assessment	
renewable	✘
no carbon dioxide emissions	✓
safe	✘
cheap	✘
known technology	✓
simple technology for use in developing countries	✘
always available, not weather dependent	✓
fully sustainable	✘

(i) Which type of energy was the student assessing? Circle one answer.

oil **nuclear** **wind** [1]

(ii) Explain your choice.

.....

.....

.....

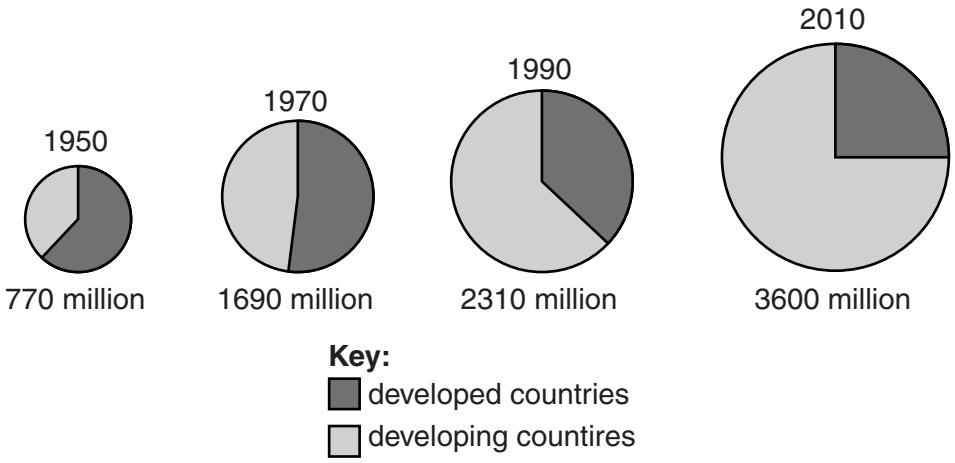
.....

.....

..... [3]

[Total: 40 marks]

6 **(a)** Look at the pie charts showing total world urban population between 1950 and 2010.



(i) In which 20 year period was the increase in urban numbers greatest?

..... [1]

(ii) Describe how the percentage distribution of urban population between developed and developing countries changed over the years from 1950 to 2010.

.....

.....

.....

.....

.....

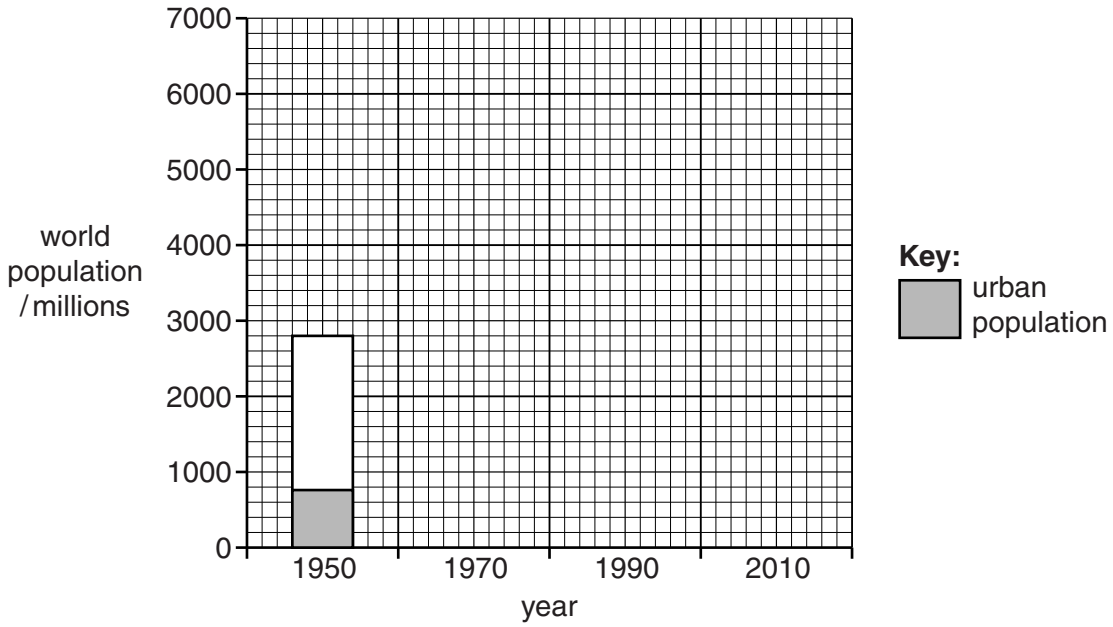
..... [3]

(iii) The table shows the total world population in millions between 1950 and 2010.

year	1950	1970	1990	2010
population	2800	3800	5250	6750

Complete the bar graph by showing world population totals, and the numbers living in urban areas stated in part **(a)**, for 1970, 1990 and 2010.

[3]



(iv) Describe how the bar graph shows widespread world **urbanisation** since 1950.

.....

.....

.....

..... [2]

(b) The two main causes of rapid urban growth in developing countries are high rates of natural increase and large scale rural to urban migration.

For Examiner's Use

Explain why both of these are higher and greater in developing countries than in developed countries.

.....

.....

.....

.....

.....

.....

.....

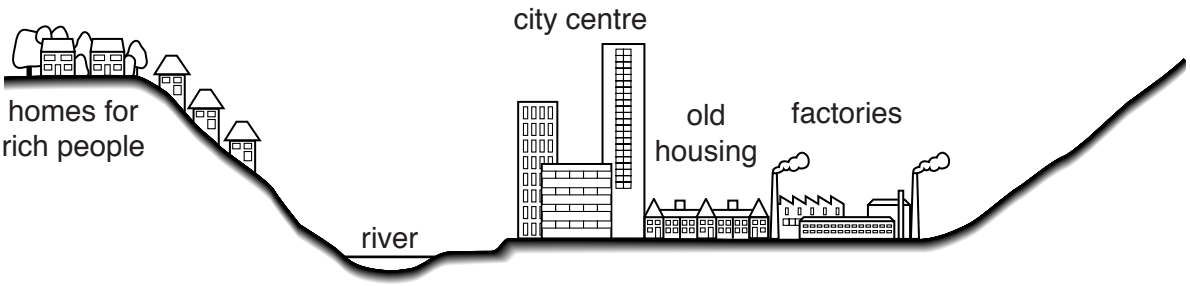
.....

..... [5]

(c) Housing is a major urban problem in many of the big cities in developing countries.

For Examiner's Use

Look at the cross-section through a developing world city.



(i) Poor migrants from rural areas build their own homes, creating shanty towns.

On the cross section, mark **S** for a likely location of a shanty town. [1]

(ii) Explain the advantages and disadvantages of this location for new arrivals in the city.

.....

.....

.....

.....

.....

..... [3]

(d) Read the newspaper report describing how Diadema, home for 400 000 people, has changed. It lies on the southern edge of Sao Paulo, Brazil's largest city.

For Examiner's Use

> Jimmy da Silva remembers what Diadema was like when he was young. There was row upon row of ramshackle houses, made from wood and corrugated iron, separated by open sewers. Drug dealers ruled the streets. Everyone was afraid of the regular police raids. Murder rates were among the highest in Brazil.
>
> Twenty years later Diadema is a different place, after the Workers' Party took control of local administration. They paved the roads, set up street lighting and built libraries and cultural centres. With the support of NGOs (non-governmental organisations) and local businesses, police cleared out the drug dealers.
>
> The area is still poor. However, brightly painted cheap cafes, fruit stalls and beauty parlours line its main street. Buses link Diadema with the city's underground rail system so that Sao Paulo city centre is less than an hour away. Children play football and swim at the new sports centre, which was paid for by local businesses.
>
> As a summary, it can be said that, over 20 years, Diadema has changed from a dangerous shanty town to a stable low-income neighbourhood.

(i) Describe what Diadema used to be like, that made it a typical shanty town similar to many others in developing world cities.

.....

.....

.....

..... [2]

(ii) Diadema is now described as a stable low-income neighbourhood. State the evidence which supports this summary statement of Diadema.

.....

.....

.....

.....

.....

..... [3]

(iii) What were the two main reasons why this big change in Diadema took place?

For Examiner's Use

.....

.....

.....

..... [2]

(e) (i) Rapid urban growth in the cities in developing countries is unsustainable because of damage to the environment.

Describe three types of environmental damage caused by urban growth.

1 .....

.....

.....

2 .....

.....

.....

3 .....

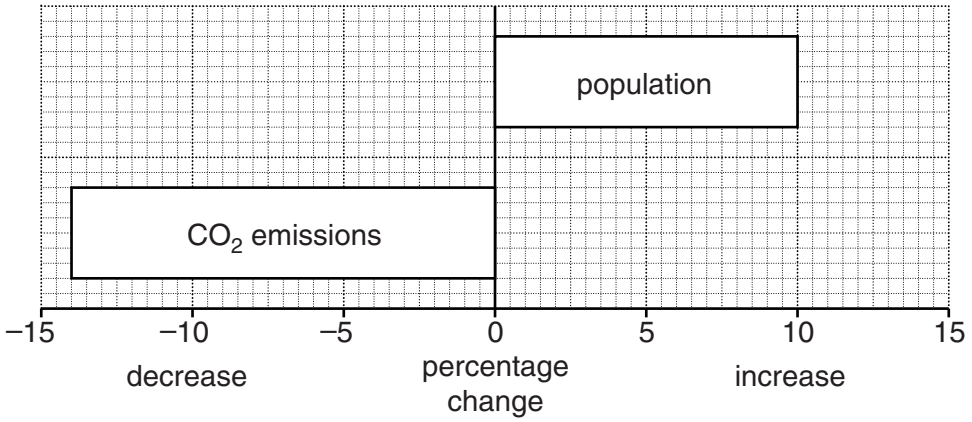
.....

..... [5]

(ii) Look at the information for Freiburg, a city in southern Germany.

For Examiner's Use

Changes in Freiburg 1992–2007



Describe how the graph shows that Freiburg is a more sustainable city than most others.

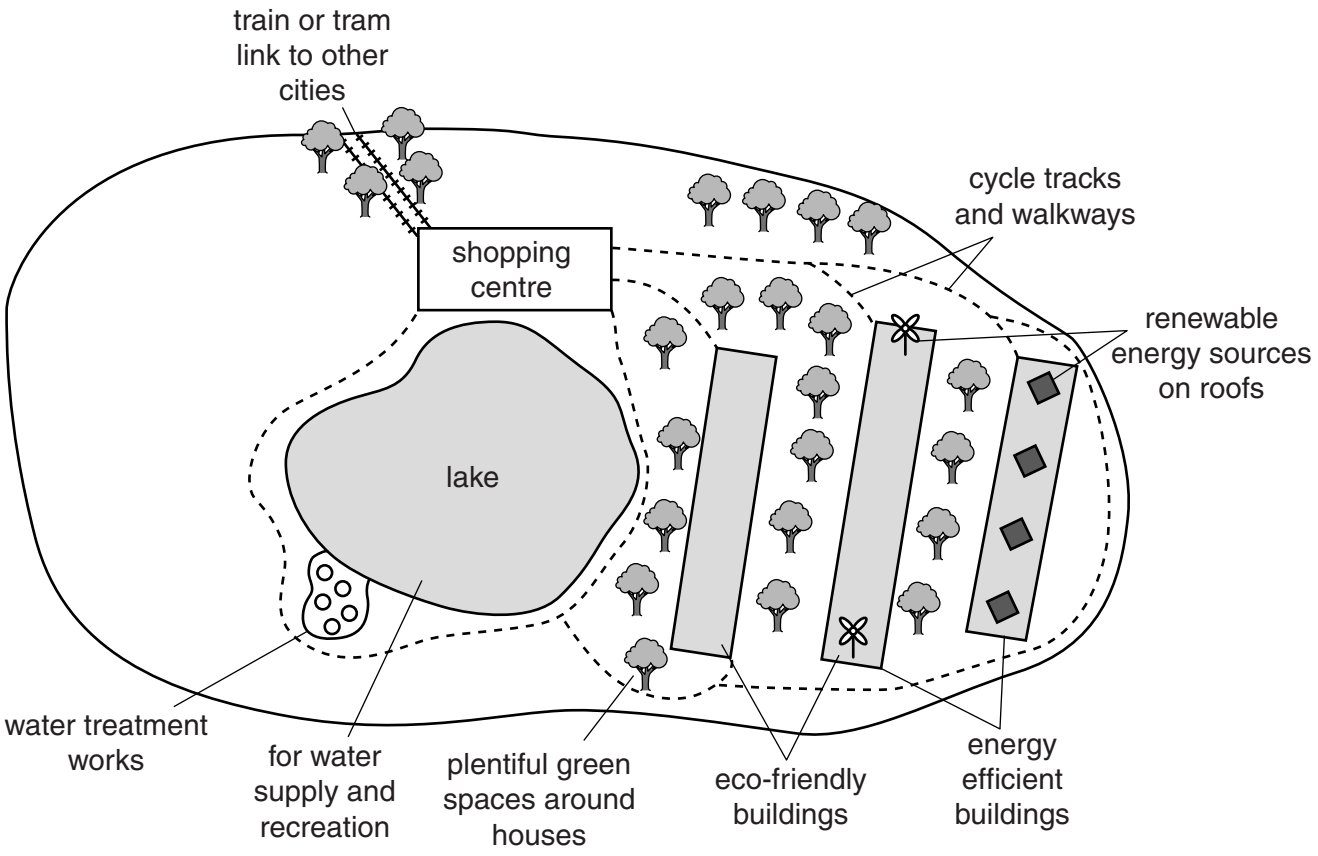
.....

.....

.....

..... [2]

(f) An eco-city is one that is designed to be sustainable with as little environmental impact as possible. Some of the characteristics of an eco-city are shown on the sketch below.



(i) Choose two of the eco-city characteristics shown. Describe fully how they make city living more sustainable.

1 .....

.....

.....

.....

2 .....

.....

.....

..... [4]

(ii) Explain what can be done with the waste produced by people living in the eco-city in order to reduce impacts on the environment.

.....

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 40 marks]

BLANK PAGE