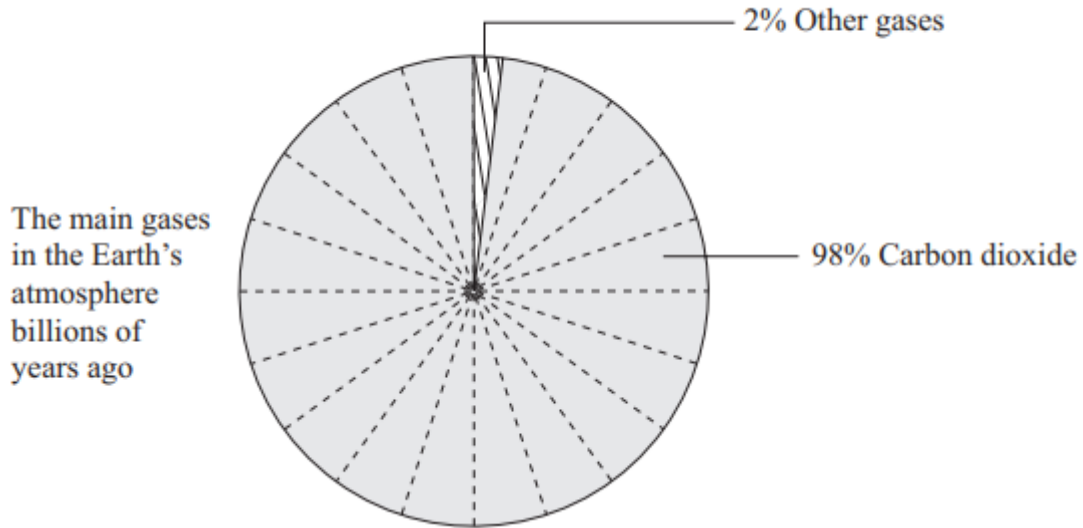
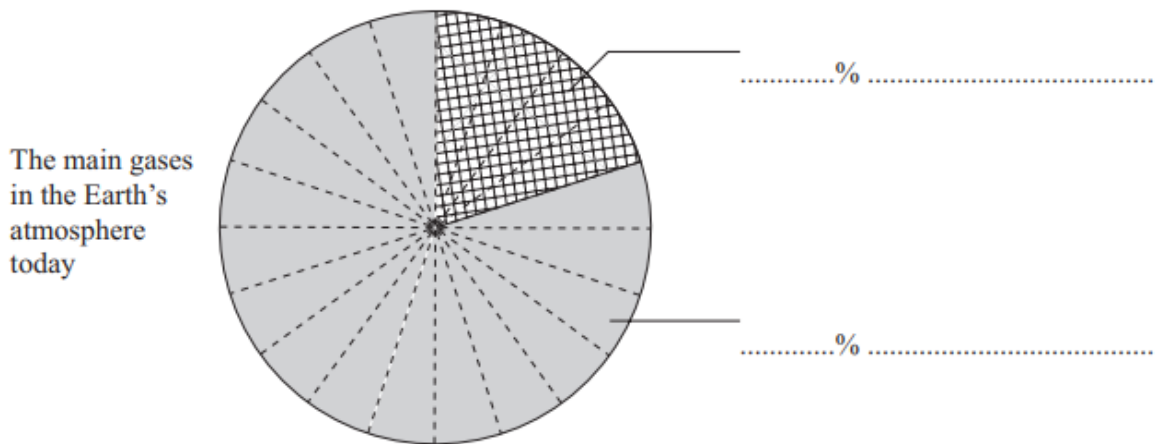


# THE ATMOSPHERE 6

**Q1.** Life on Earth would not exist without the atmosphere. Billions of years ago the composition of the Earth's atmosphere was very different from the composition today.



**(a)** Label the pie chart below to show the percentages and names of the two main gases in the Earth's atmosphere today.



(2 marks)

**(b)** There is evidence that the composition of the Earth's atmosphere is still changing. One possible reason is that many power stations generate electricity by burning fossil fuels such as coal, oil or natural gas. Sulfur dioxide,  $\text{SO}_2$ , is produced when coal burns in air.

**(i)** What environmental problem does sulfur dioxide cause?

(1 mark)

(ii) How could this environmental problem be reduced in coal-fired power stations?

(1 mark)

(iii) Gas-fired power stations burn methane, CH<sub>4</sub>, in air.

Complete the word equation for this reaction.

methane + ..... → carbon dioxide + .....

(2 marks)

(c) Excess carbon dioxide should be prevented from entering the atmosphere. Explain why.

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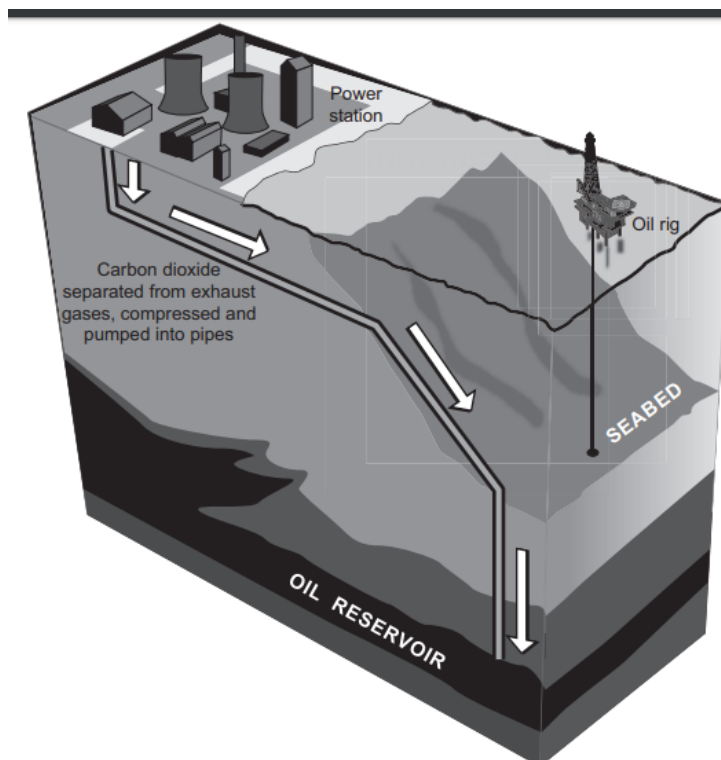
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(2 marks)

(d) Carbon dioxide is produced when fossil fuels burn in power stations. The diagram represents one idea to prevent excess carbon dioxide from entering the atmosphere.



Use the diagram to explain how carbon dioxide can be prevented from entering the atmosphere.

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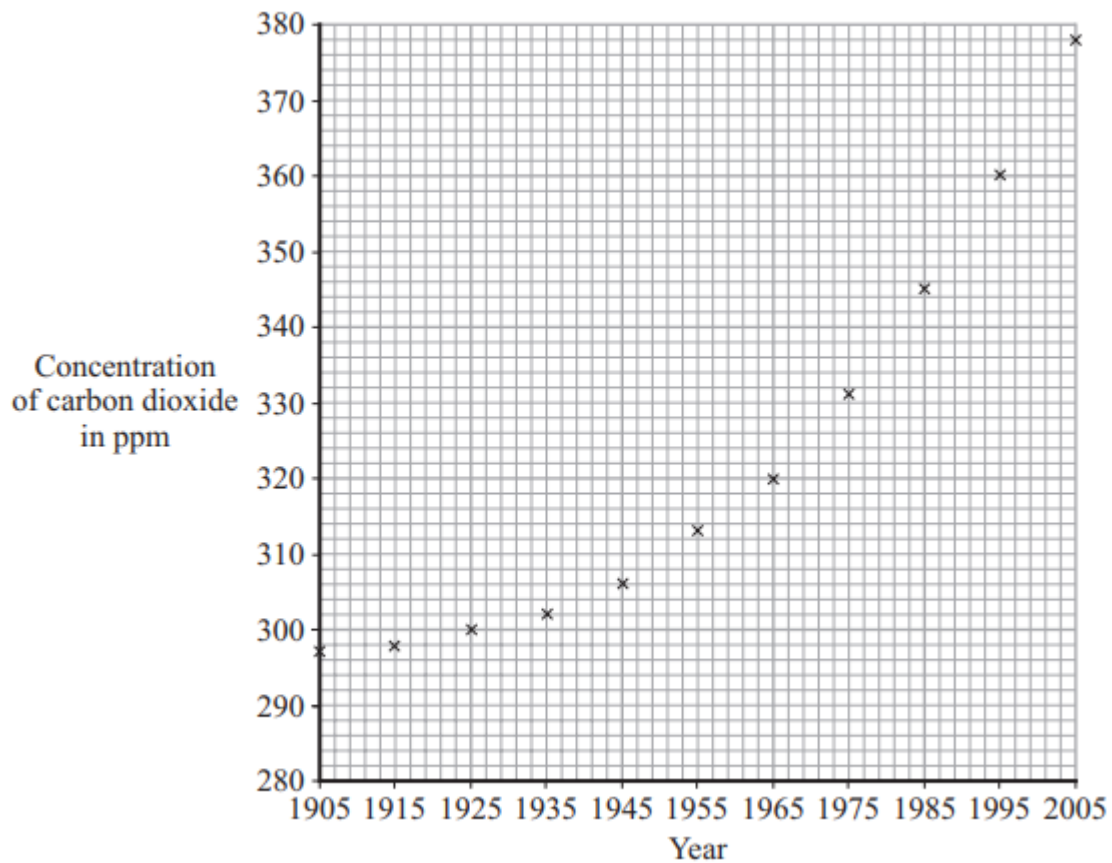
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(2 marks)

**Q2.** Global warming is thought to be happening because of the increased burning of fossil fuels. The concentration of carbon dioxide in the air from 1905 to 2005 has been calculated.



**(a)** Draw a line of best fit for these points.

(1 mark)

**(b)(i)** What was the concentration of carbon dioxide in 1955?

..... ppm

(1 mark)

**(ii)** In what year did the concentration of carbon dioxide reach 350 ppm?

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(1 mark)

**(c)** Use the graph to describe, in as much detail as you can, what happened to the concentration of carbon dioxide from 1905 to 2005.

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(2 marks)

**Q3.**

**(i)** Suggest two problems caused by the disposal of plastics in landfill sites.

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(2 marks)

**(ii)** Some companies are using bio-plastics made from plants such as corn. Less fossil fuel is used to make bio-plastics than is used to make plastics from crude oil.

Plastics made from plants would be more environmentally friendly than plastics made from crude oil.

Explain why.

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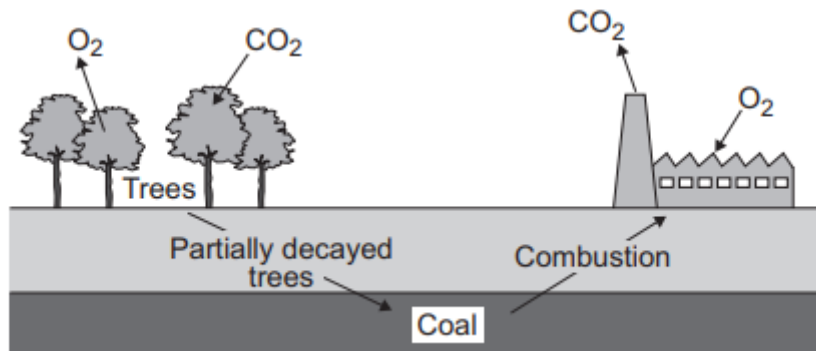
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(2 marks)

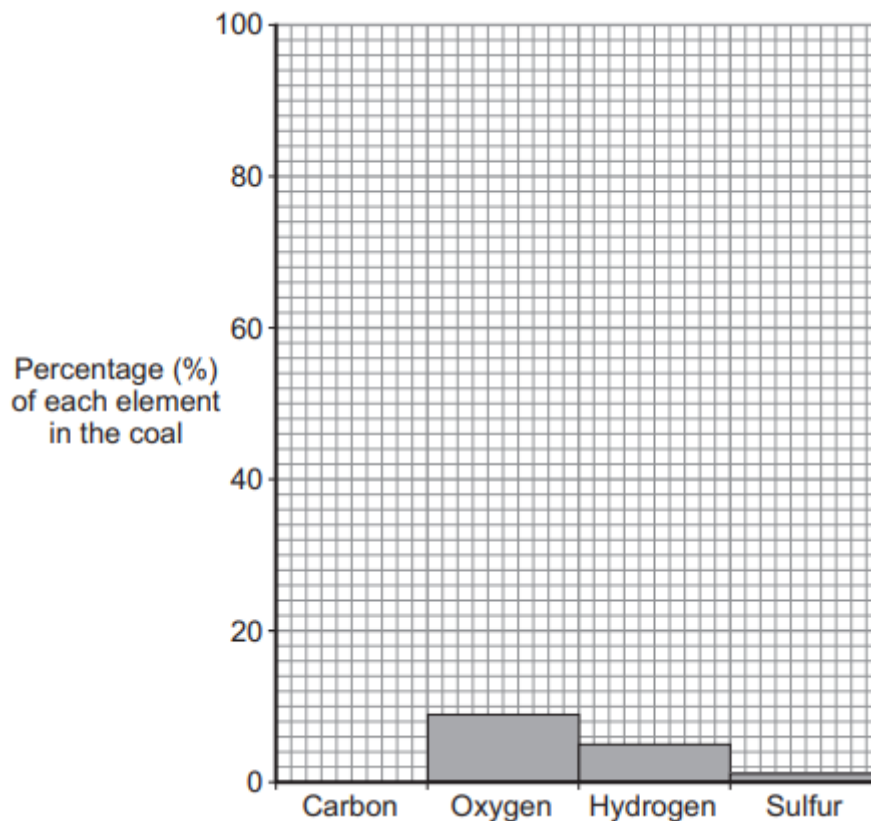
**Q4.** About 3000 million years ago carbon dioxide was one of the main gases in the Earth's early atmosphere.

About 400 million years ago plants and trees grew on most of the land. When the plants and trees died they were covered by sand and slowly decayed to form coal.

Today coal is burned in power stations to release the energy needed by industry.



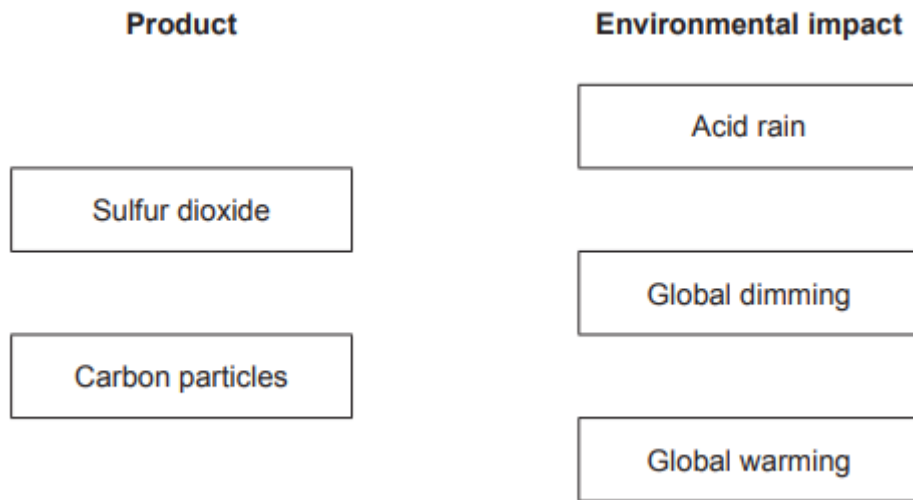
**(a)** The bar chart shows the percentage of some of the elements in this coal.



**(i)** This coal contains 85 % carbon. Draw the bar for carbon on the chart.

(1 mark)

- (ii) Coal is burned in the atmosphere to release energy. Two of the products of burning coal are shown. Draw one line from each product to its environmental impact.



(2 marks)

- (b) Use the information above and your knowledge and understanding to answer these questions.

- (i) How did the formation of coal decrease the amount of carbon dioxide in the Earth's early atmosphere?

(1 mark)

- (ii) How does burning coal affect the amount of carbon dioxide in the Earth's atmosphere? Explain your answer.

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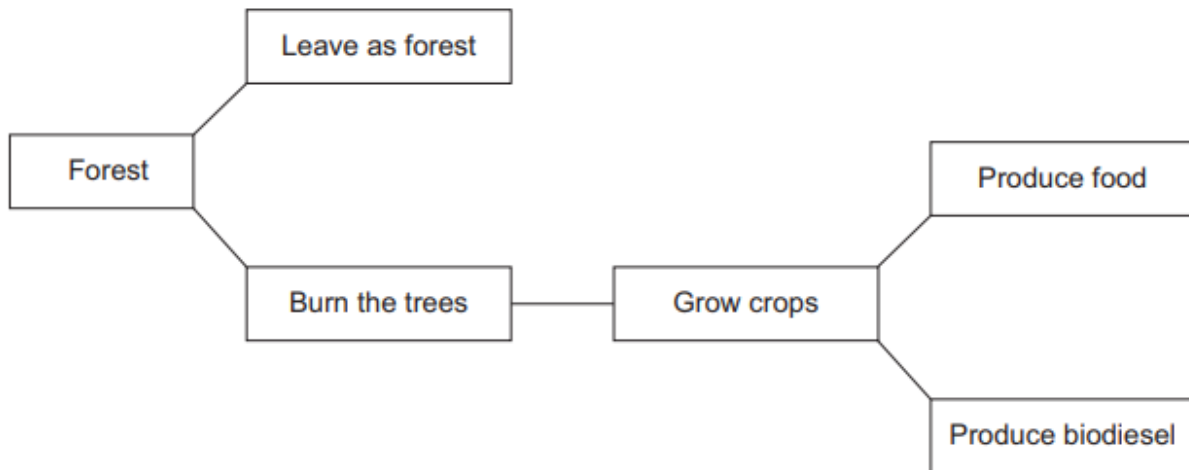
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(2 marks)

- Q5.** Petroleum diesel is a fuel made from crude oil. Biodiesel is a fuel made from vegetable oils. To make biodiesel, large areas of land are needed to grow crops from which the vegetable oils are extracted. Large areas of forest are cleared by burning the trees to provide more land for growing these crops.



**(a)** Use this information and your knowledge and understanding to answer these questions.

**(i)** Carbon neutral means that there is no increase in the amount of carbon dioxide in the atmosphere. Suggest why adverts claim that using biodiesel is carbon neutral.

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(2 marks)

**(ii)** Explain why clearing large areas of forest has an environmental impact on the atmosphere.

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(2 marks)

**(b)** Why is there an increasing demand for biodiesel?

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(1 mark)

(c) Suggest why producing biodiesel from crops:

(i) causes ethical concerns

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(1 mark)

(ii) causes economic concerns.

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(1 mark)

**Q6.** Read the article about plastics and then answer the questions.

**THE PROBLEM WITH PLASTIC WASTE**

Millions of tonnes of plastics are made from crude oil every year.

Most of the litter found on beaches is plastic waste.

80% of plastics produced end up in landfill sites.

(i) Draw a ring around the correct answer in the box to complete the sentence.

Plastic waste needs to be removed from beaches because it

decomposes.  
is reactive.  
is not biodegradable.

(1 mark)

(ii) Suggest a problem caused by 80 % of plastics going to landfill sites.

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(1 mark)

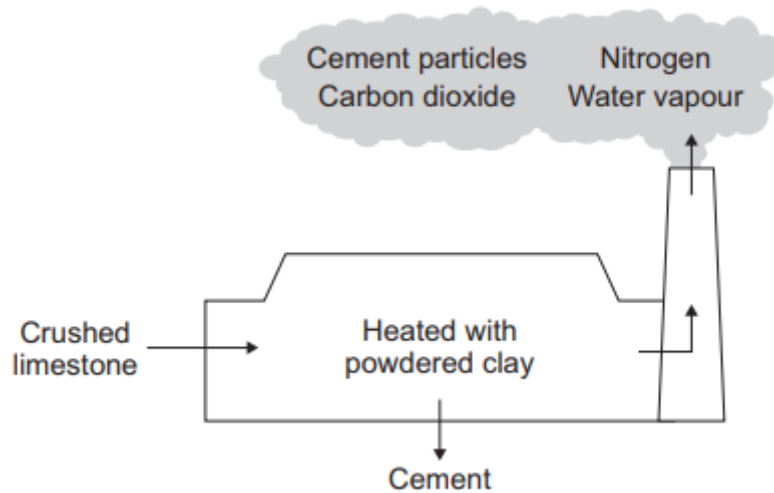
(iii) Suggest one way of reducing the amount of plastics going to landfill sites.

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(1 mark)



**Q7.** The diagram shows some of the substances used and produced at a cement works.



Name one of the substances produced at the cement works that causes atmospheric pollution.

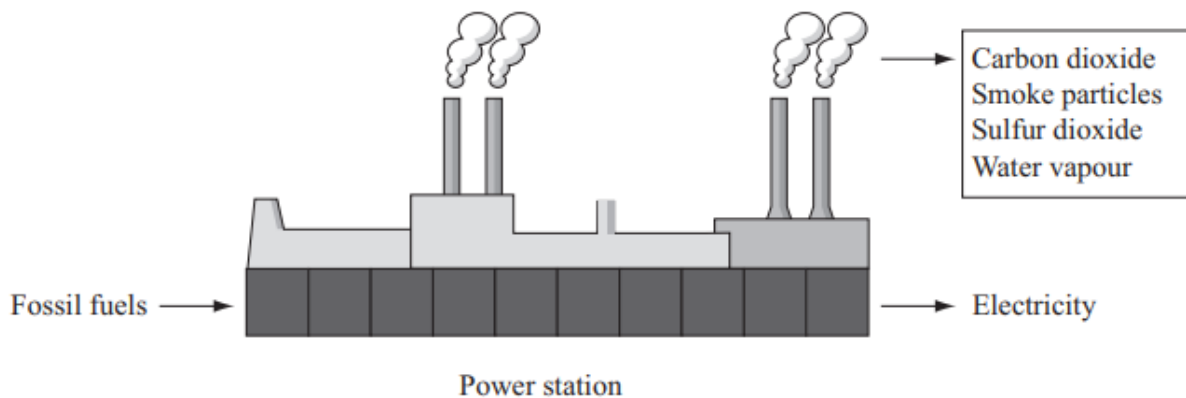
State one effect of this atmospheric pollution.

Name \_\_\_\_\_

Effect \_\_\_\_\_

(2 marks)

**Q8.** Most electricity in the UK is generated in power stations that burn fossil fuels. The diagram lists some of the substances released into the air when fossil fuels are burned.



**(a)(i)** Which one of the substances released into the air causes acid rain?

\_\_\_\_\_

(1 mark)

(ii) In the sentence below, draw a ring around the correct answer.

The type of environmental pollution caused by

smoke particles is

- global dimming
- global warming
- rising sea levels

(1 mark)

(iii) Suggest how the burning of fossil fuels may cause climate change.

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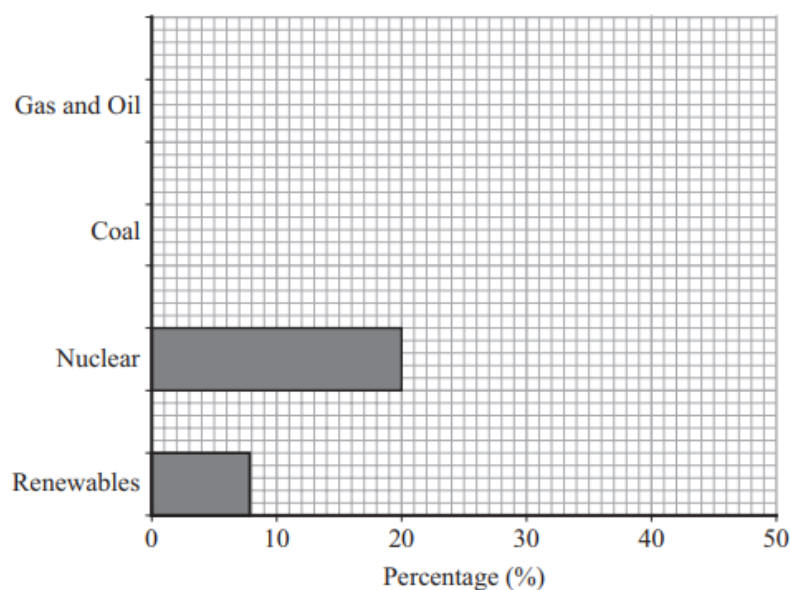
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(2 marks)

(b) The table shows the percentage of electricity generated by different energy sources.

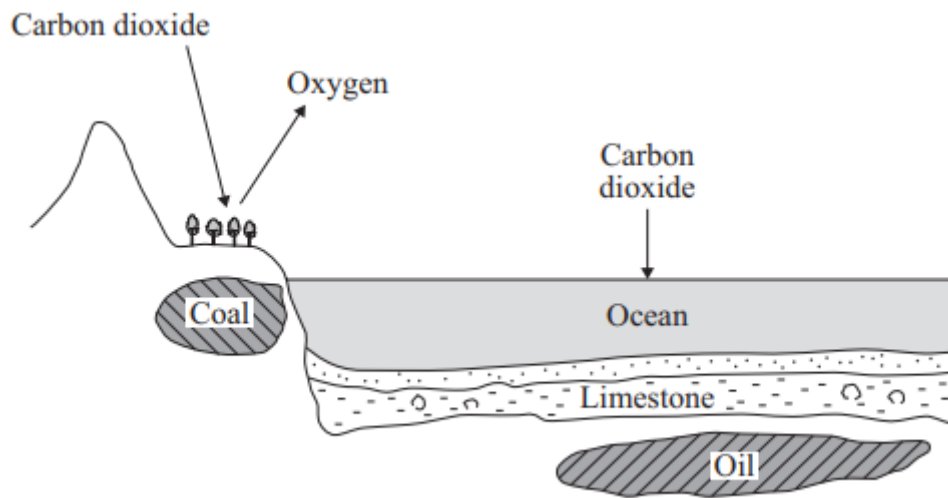
Energy sources	Renewables	Nuclear	Coal	Gas and Oil
Percentage (%)	8	20	32	40

Complete the bar chart to show the percentage of electricity generated by coal and by gas and oil.



(2 marks)

**Q9.** The diagram shows how carbon dioxide is removed from the Earth's atmosphere.



Describe what happened to the carbon dioxide in the Earth's early atmosphere. Use the diagram to help you.

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(3 marks)

Total marks (46)