



KS3 Science

Carbon and Carbon Dioxide

Question Paper

Time available: 40 minutes

Marks available: 40 marks

www.accesstuition.com

1.

Many human activities result in carbon dioxide emissions. Our carbon footprint is a measure of how much carbon dioxide we each cause to be produced.

(a) Why should we be concerned about our carbon footprint?

.....
.....
.....

(1)

(b) Most power stations in the UK burn coal. Coal was formed from tree-like plants over millions of years.

Suggest why burning wood instead of coal would help to reduce our carbon footprint.

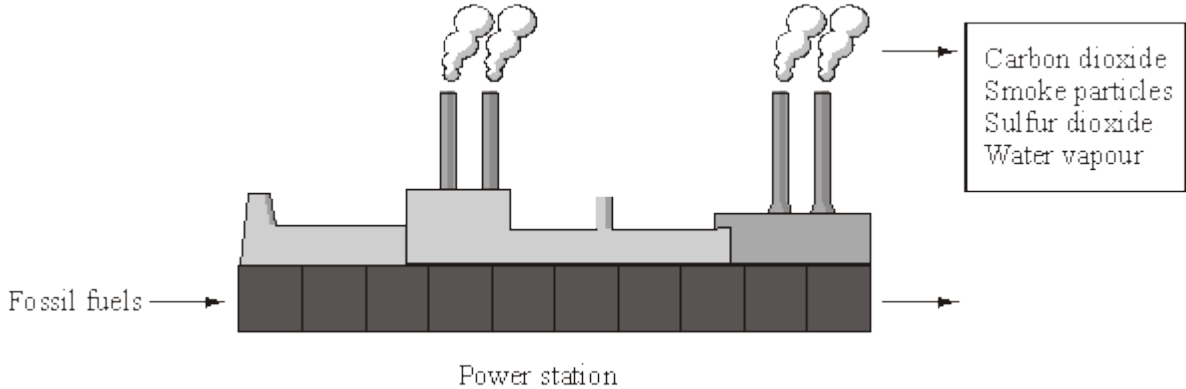
.....
.....
.....
.....
.....
.....
.....
.....

(3)

(Total 4 marks)

2.

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)

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

The type of environmental pollution caused by

smoke particle is

- | |
|-------------------|
| global dimming |
| global warming |
| rising sea levels |

(1)

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

.....

.....

.....

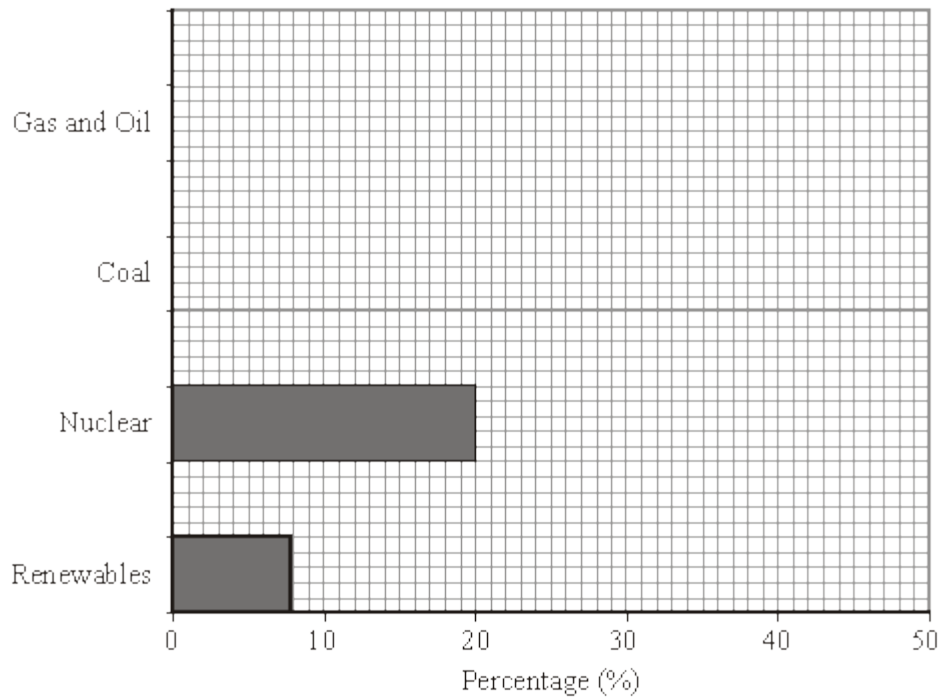
.....

(2)

(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

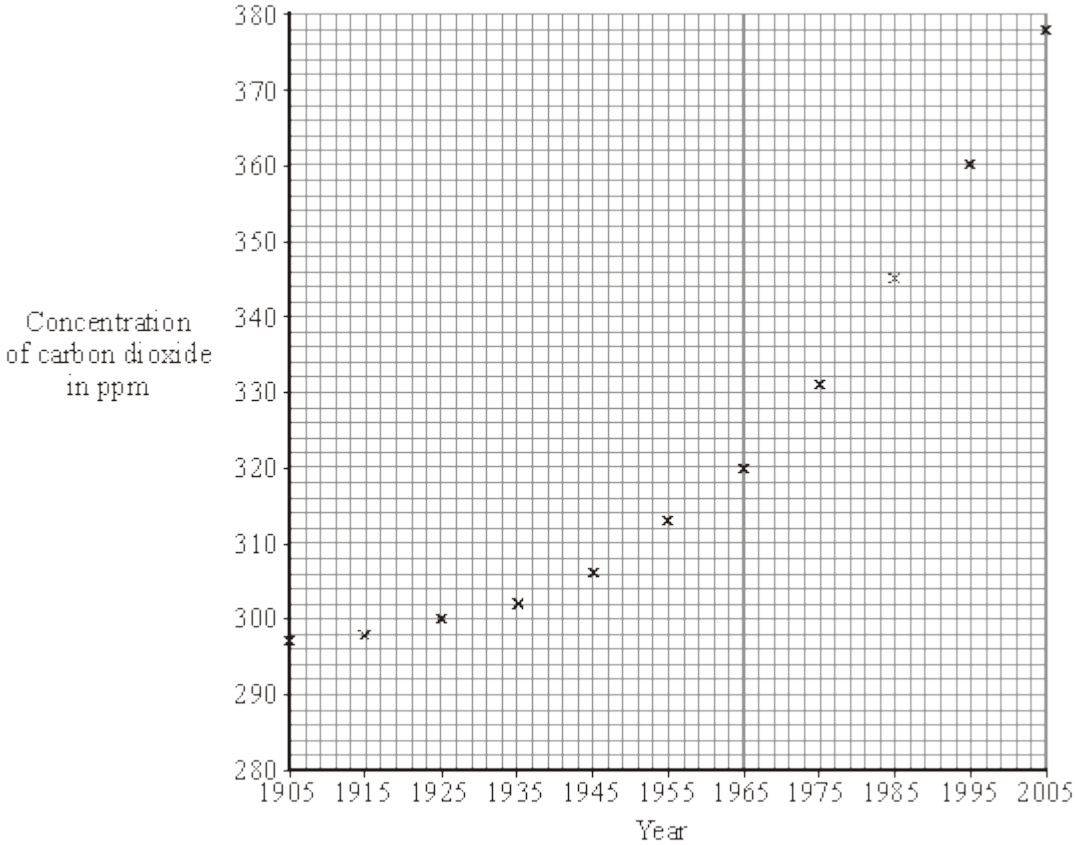
Complete the bar chart to show the percentage of electricity generated by coal and by gas and oil.



(2)
(Total 6 marks)

3.

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)

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

..... ppm

(1)

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

.....

(1)

- (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.

.....
.....
.....
.....

(2)
(Total 5 marks)

4.

- (a) For the last 200 million years the amount of carbon dioxide in the atmosphere has remained almost the same.

Describe the natural processes which remove carbon dioxide from the atmosphere.

To gain full marks in this question you should write your ideas in good English.
Put them into a sensible order and use the correct scientific words.

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

(4)

(b) The amount of carbon dioxide in the atmosphere has increased over the last one hundred years. Suggest **two** reasons why this has happened.

1

.....

2

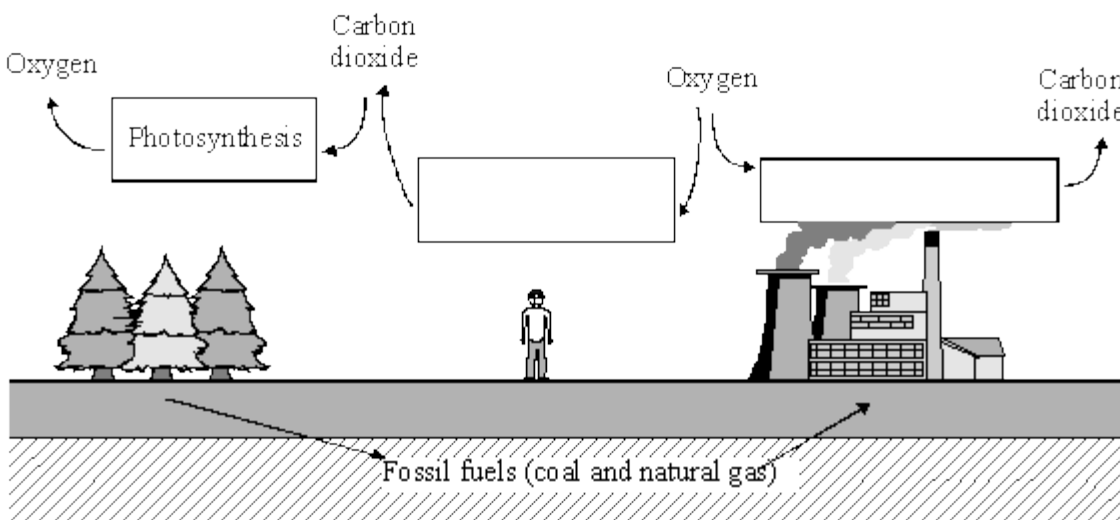
.....

(2)

(Total 6 marks)

5.

In the carbon cycle the amounts of carbon dioxide and oxygen in the air are changed by several processes.



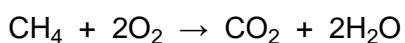
(a) The names of some processes are given in the box below.

- | | | |
|----------------|---------------|----------------|
| combustion | decomposition | neutralisation |
| photosynthesis | | respiration |

Choose the correct process for each box in the diagram. The first one has been done for you.

(2)

(b) Fossil fuels, such as natural gas, react with oxygen.



..... + oxygen → carbon dioxide +

Complete the word equation for this reaction

(2)

(c) What problem is caused by the formation of large amounts of carbon dioxide?

.....
.....

(1)

(Total 5 marks)

6.

For 200 million years the proportions of the different gases in the atmosphere have been much the same as today. Over the past 150 years the amount of carbon dioxide in the atmosphere has increased from 0.03% to 0.04%.

(a) Describe how carbon dioxide is released into the atmosphere:

(i) by human and industrial activity;

.....
.....
.....
.....

(2)

(ii) from carbonate rocks by geological activity.

.....
.....
.....
.....

(2)

(b) Explain how the seas and oceans can decrease the amount of carbon dioxide in the atmosphere.

.....
.....
.....
.....
.....
.....

(3)

(c) (i) Give **one** reason why the amount of carbon dioxide in the atmosphere is increasing gradually.

.....
.....

(1)

(ii) Give **one** effect that increasing levels of carbon dioxide in the atmosphere may have on the environment.

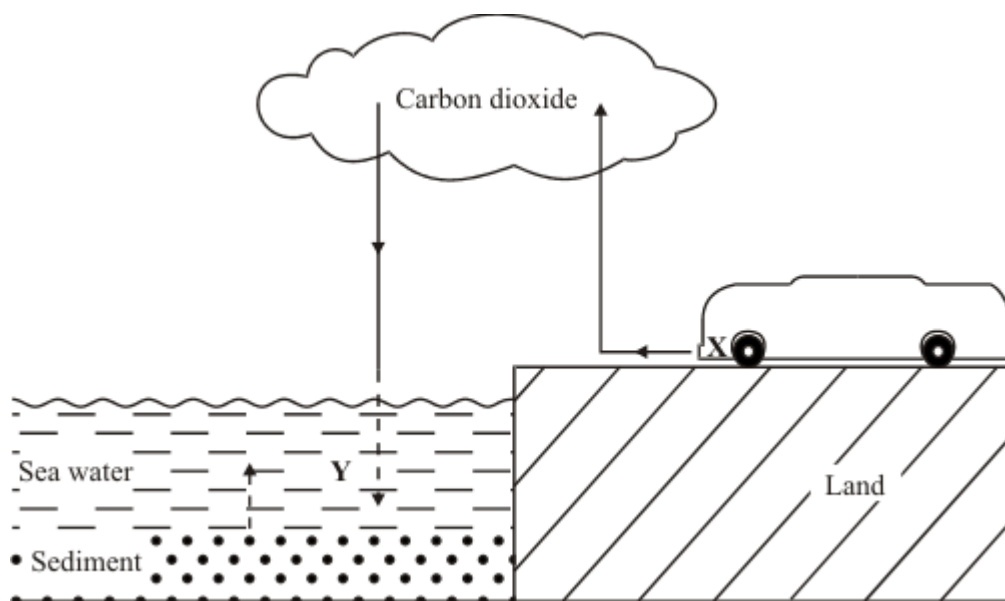
.....
.....

(1)

(Total 9 marks)

7.

The amount of carbon dioxide in the atmosphere is increased by reactions that occur in internal combustion engines (X) and is decreased by reactions in sea water (Y).



Describe, in as much detail as you can, the reactions which take place at X and Y.

(a) X

.....
.....
.....

(2)

(b) Y

.....

.....

.....

(3)
(Total 5 marks)