

GCSE Chemistry B (Twenty First Century Science)

J258/04 Depth in chemistry (Higher Tier)

Question Set 21

1. Over the last 20 years there have been a series of agreements between governments to limit the emission of greenhouse gases. These gases include carbon dioxide, methane and nitrous oxides.

(a) Governments are more concerned about reducing the emissions of carbon dioxide than reducing the emissions of the other gases.

The table shows some measurements of the concentrations of these gases in the atmosphere now.

Gas	Concentration in the atmosphere
carbon dioxide	0.04%
methane	1800 ppb (parts per billion)
nitrous oxides	1400 ppb (parts per billion)

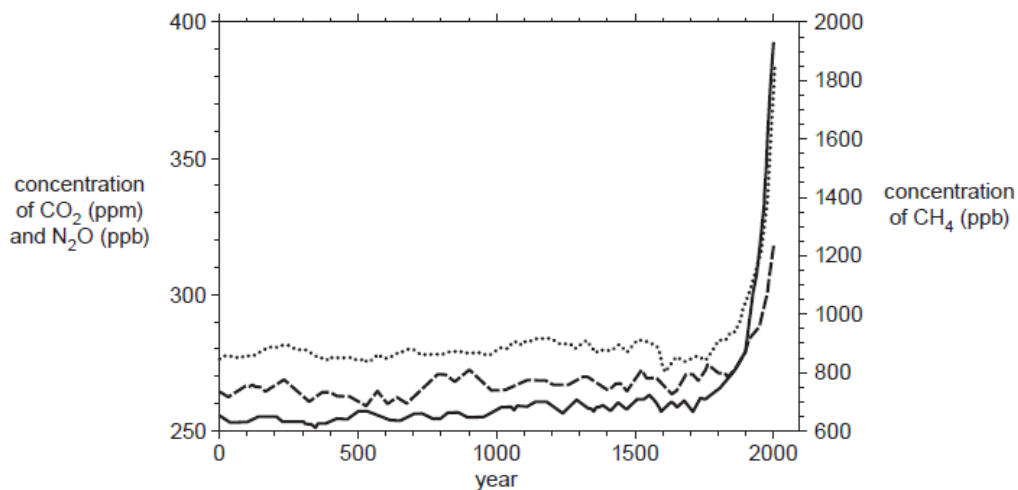
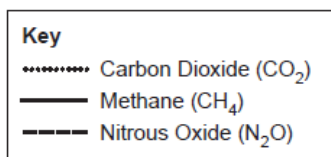
(i) Calculate the **percentage** of methane in the atmosphere.

1.0 ppb = $1.0 \times 10^{-7} \%$

Methane = % [2]

(ii) Use your answer to (a)(i) to explain why governments are more concerned about carbon dioxide emissions than emissions of the other gases in the table. [2]

(b) The first major agreement between countries was the 1997 Kyoto Protocol.



This graph shows the concentration of some greenhouse gases in the atmosphere before the Kyoto Protocol was introduced.

Some people discuss the graph.



Amaya

The concentration of nitrous oxide is usually about 20 ppm lower than the concentration of carbon dioxide.

In 2000, concentration of carbon dioxide was about three times higher than it was 2000 years ago.



James

The concentration of methane has increased by about 50% during the period shown on the graph.



Layla

There are general correlations on the graph but annual concentrations do not show close correlations.



Amir

Does the data in the graph support each person's point of view?

Use data from the graph to explain each answer.

Person	Explanation
Amaya
James
Layla
Amir

[6]

Total Marks for Question Set 21: 10



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