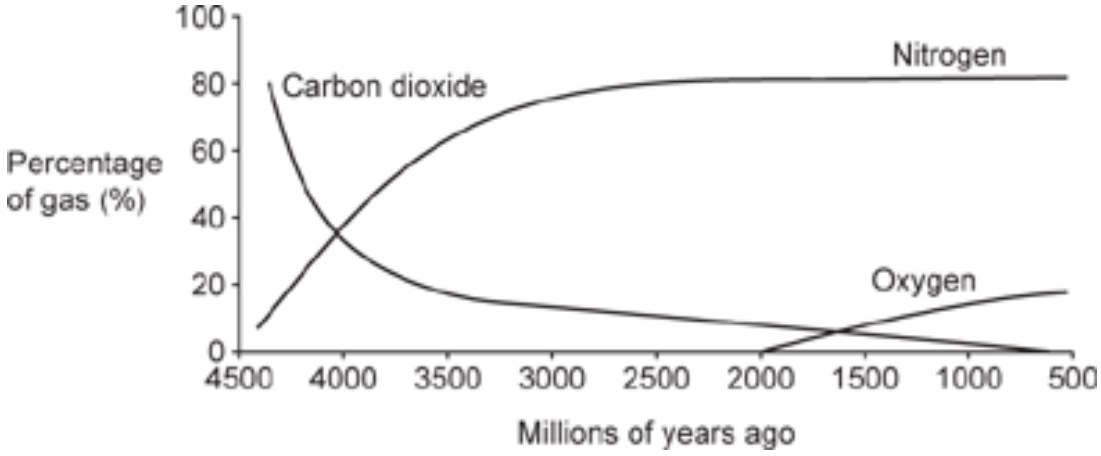
1(a). The Earth's early atmosphere is thought to have been mainly carbon dioxide, with smaller amounts of water vapour.

Describe how the amounts of these gases changed over time to develop an oxygen-rich atmosphere.

[3]

(b). The graph shows how the percentages of different gases in the atmosphere have changed over time.



i. Describe the relationship between the percentage of carbon dioxide and the percentage of nitrogen in the atmosphere.

[1]

ii. Estimate when the percentage of carbon dioxide and the percentage of oxygen were equal.

Answer = ... millions of years ago **[1]**

2. Nitrogen and oxygen react together at high temperatures in car engines.

Nitrogen monoxide is made.

What is the **balanced** equation for the reaction?

A $N + O \rightarrow NO$
B $N + O_2 \rightarrow NO_2$
C $N_2 + O_2 \rightarrow 2NO$
D $2N_2 + O_2 \rightarrow 2N_2O$

Your answer ☐ **[1]**

3. Which statement about the greenhouse effect is correct?

A Greenhouse gases absorb all the infrared radiation that is emitted by the Earth's surface.
B Greenhouse gases make up a large percentage of the Earth's current atmosphere.
C The greenhouse effect is caused by the absorption and reflection of infrared radiation by greenhouse gases.
D The higher the concentration of greenhouse gases in the Earth's atmosphere, the colder the Earth is likely to become.

Your answer ☐ **[1]**

4. Which row in the table shows three greenhouse gases?

A	argon	carbon dioxide	nitrogen
B	carbon dioxide	methane	water vapour
C	hydrogen	methane	water vapour
D	carbon dioxide	nitrogen	water vapour

Your answer ☐ **[1]**

5. Which gas was the most abundant in the Earth's early atmosphere?

A Argon
B Carbon dioxide
C Nitrogen
D Oxygen

Your answer ☐ **[1]**

6. Petrol is a mixture of hydrocarbons obtained from crude oil.

When petrol burns in a car engine the exhaust gases contain nitrogen monoxide, NO, and carbon monoxide, CO. These are atmospheric pollutants.
Describe one environmental problem for each gas.

NO _____

CO _____

[2]

7. Which gases is the Earth's early atmosphere thought to have contained?

A Carbon dioxide and oxygen
B Carbon dioxide and water vapour
C Methane and oxygen
D Nitrogen and oxygen

Your answer ☐ **[1]**

END OF QUESTION PAPER