

1(a). The sentences describe one possible theory for how the Earth's atmosphere evolved.

- A The Earth cooled.
- B Carbon cycle now keeps the composition of the atmosphere almost constant.
- C Carbon dioxide from the air dissolved in oceans.
- D Water vapour condensed to form oceans.
- E Plants evolved and used photosynthesis to take in carbon dioxide and make oxygen.
- F Volcanoes released water vapour and carbon dioxide.

Write the letters in the boxes to show the correct order of the sentences.

Two have been done for you.

F

C

[3]

(b). Complete the table to show the gases in the Earth's atmosphere today.

Gas	Percentage in Earth's atmosphere (%)
.....	78
.....	21
Carbon dioxide / noble gases / water vapour	1

[2]

(c). Clean water is essential for life.

- i. State the name used for water that is safe to drink.

[1]

- ii. Explain why chlorine is added to water to make it safe to drink.

[1]

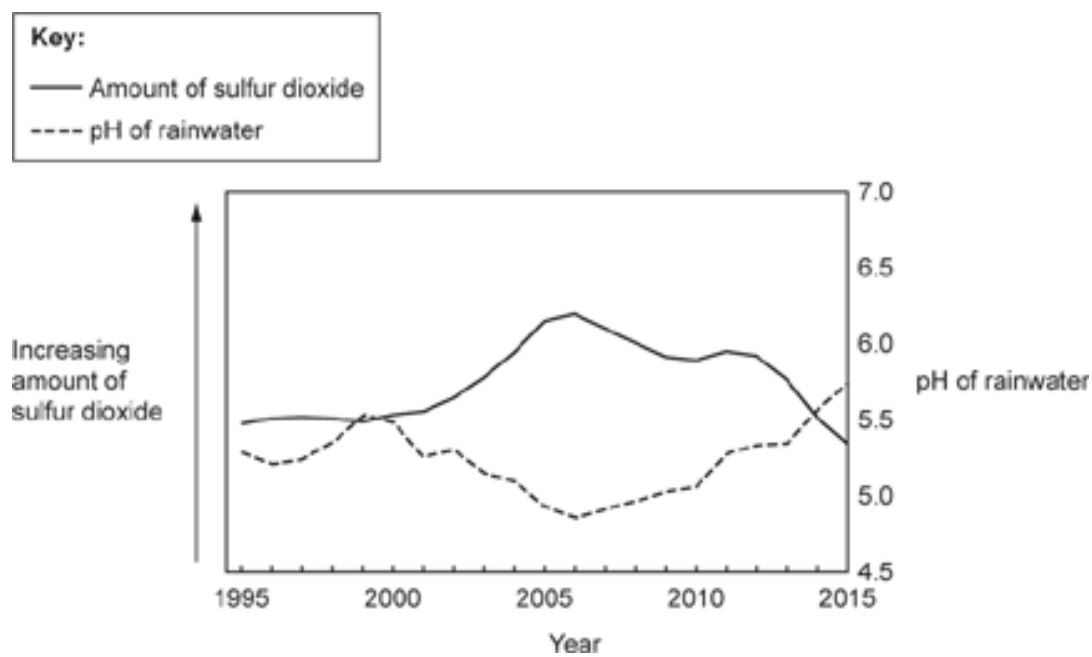
- iii. Describe the test for chlorine gas.

[2]

(d). Sulfur dioxide is a pollutant in the atmosphere.

The graph shows how the amount of sulfur dioxide changed from 1995 to 2015.

The graph also shows how the pH of rainwater changed from 1995 to 2015.



Acid rain is an environmental problem.

- i. There is a link between the amount of sulfur dioxide in the atmosphere and the amount of acid rain.

Complete the table by correctly identifying which word finishes each sentence.

Put **one** tick (✓) in each row.

	Decreases	Increases	Stays the same
When the amount of sulfur dioxide increases the pH of rainwater...			
Rainwater is more acidic when the pH...			
When the rainwater is more acidic the amount of acid rain...			

[3]

- ii. State **one** problem caused by acid rain.

.....

.....

[1]

2. Carbon monoxide, CO, is made in the **incomplete** combustion of methane.

State why carbon monoxide is a problem.

----- [1]

3. 4.8 dm³ of air contains 0.12 dm³ of water vapour.

What is the percentage of water vapour in the air?

- A 0.3%
- B 2.5%
- C 12%
- D 97.5%

Your answer

☐

[1]

4. What is the major source of oxides of nitrogen in the atmosphere?

- A Combustion of impurities in coal
- B High temperature reactions in car engines
- C Incomplete combustion of fossil fuels
- D Industrial processes such as metal extraction

Your answer

☐

[1]

5. Combustion of alkanes makes carbon dioxide gas.

- i. State an environmental problem caused by increased levels of carbon dioxide gas.

----- [1]

- ii. Explain how this environmental problem can be reduced.

----- [1]

6. Tap water is treated to make it safe to drink.

Which substance is added to the tap water to kill bacteria and microbes?

- A Aluminium sulfate
- B Carbon dioxide
- C Chlorine
- D Iodine

Your answer ☐

[1]

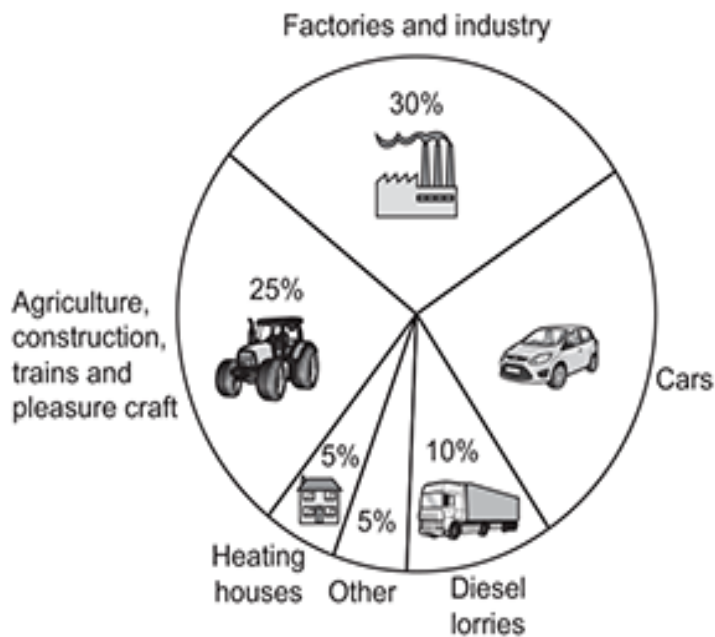
7. What was the main gas in the Earth's early atmosphere?

- A Ammonia
- B Carbon dioxide
- C Nitrogen
- D Oxygen

Your answer ☐

[1]

8. The pie chart shows different sources of emissions of oxides of nitrogen.



- i. Calculate the percentage emissions of oxides of nitrogen from cars.

Percentage emissions of oxides of nitrogen from cars = % [1]

- ii. What is the **largest** source of emissions of oxides of nitrogen?

-----[1]

9(a). Describe **two** potential problems of increased levels of carbon dioxide in the Earth's atmosphere.

1 _____

2 _____

-----[2]

(b). The electricity used to charge electric cars can be produced by burning coal which produces a large amount of carbon dioxide.

The amount of carbon dioxide produced is reduced by 95% if the electricity is generated in a different way.

Suggest how the electricity used to charge the car can be generated, other than by burning coal.

-----[1]

10(a). Atmospheric pollution can be caused by

- carbon monoxide
- oxides of nitrogen
- sulfur dioxide.

Explain why **carbon monoxide** in the atmosphere is a problem.

-----[2]

(b). Sulfur dioxide causes acid rain.

Why is acid rain a problem?

-----[1]

END OF QUESTION PAPER