

3: Air and water – Topic questions

Paper 4

The questions in this document have been compiled from a number of past papers, as indicated in the table below.

Use these questions to formatively assess your learners' understanding of this topic.

Question	Year	Series	Paper number
3	2016	June	43
3	2016	November	42

The mark scheme for each question is provided at the end of the document.

You can find the complete question papers and the complete mark schemes (with additional notes where available) on the School Support Hub at www.cambridgeinternational.org/support

3 Clean dry air contains mainly nitrogen and oxygen.

(a) Name **two** other gases that are in clean dry air.

.....
..... [2]

(b) Air often contains pollutants.

Identify **three** common gaseous pollutants in air and state how each of these pollutants are produced.

pollutant gas 1

how it is produced

.....

pollutant gas 2

how it is produced

.....

pollutant gas 3

how it is produced

.....

[6]

[Total: 8]

3 Clean, dry air contains a small amount of carbon dioxide.

(a) The percentages of the **other** gases present in clean, dry air are shown in the table.

Complete the table by inserting the names of these gases.

name of gas	percentage present
	78
	21
	1

[2]

(b) Oxides of nitrogen are atmospheric pollutants which can cause acid rain.

Describe the formation of oxides of nitrogen and suggest how they can cause acid rain.

.....

.....

.....

..... [3]

(c) Methane contributes to the greenhouse effect.

State **two** sources of methane.

1

2 [2]

(d) Combustion and respiration add carbon dioxide to the atmosphere.

Name **one** natural process which removes carbon dioxide from the atmosphere.

..... [1]

[Total: 8]

Question	Answer	Marks
3 (a)	any 2 from: carbon dioxide; nitrogen; any named noble gas;	2
3 (b)	any 6 from: carbon monoxide; from incomplete combustion (of carbon-containing fuel); sulfur dioxide; from burning fossil fuels / roasting ores which contain sulfur / volcanoes; oxides of nitrogen; nitrogen reacting with oxygen in car engines / lightning; methane; from anaerobic decomposition / anaerobic decay;	6
		Total: 8
3 (a)	nitrogen (78%) AND oxygen (21%) noble gases OR argon (1%)	2
3 (b)	nitrogen AND oxygen (from the air) react (in the) high temperatures of a car engine NO _x / oxides of nitrogen react with or dissolve in water (to form an acid)	3
3 (c)	any 2 from: (named) ruminant animal / cattle / (anaerobic) digestion / flatulence (in animals) / animal waste / (animal) dung decomposing vegetation / animals / organisms / decaying (organic) matter / (fractional distillation / cracking of) petroleum / crude oil / hydrocarbons / natural gas / coal	2
3 (d)	photosynthesis	1
		Total: 8