

# MARK SCHEME

# GCSE

## CHEMISTRY

## AQA - TRIPLE SCIENCE

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C9 - TEST 2  
ATMOSPHERE  
Beginner

## Mark schemes

- 1.** (a) substances/chemicals/compounds  
*gains 1 mark*
- but gases (accept vapours)*  
*gains 2 marks*
- heat (accept light)  
*for 1 mark*
- 3
- (b) carbon dioxide/CO<sub>2</sub>  
water (vapour)/H<sub>2</sub>O  
sulphur dioxide/SO<sub>2</sub>  
(accept correct formulae)  
*in any order for 1 mark each*
- 3
- [6]**
- 2.** (a) respiration  
combustion  
*1 mark each*
- 2
- (b) methane  
water  
*1 mark each*  
*accept steam*  
*do **not** accept natural gas for methane*  
*do **not** accept hydrogen oxide*
- 2
- (c) greenhouse effect (increased)  
*accept (global) warming*  
*accept polar ice caps melt*  
*accept rising sea levels*  
*accept problems with climatic change*  
*do **not** accept changes to the weather **or** acid rain*
- 1
- [5]**
- 3.** (a) Methane
- 1
- (b) Sea levels rising
- 1
- (c) Burning of fossil fuels
- 1

- (d) carbon dioxide concentration stayed constant from 1850 to 1900 1
- carbon dioxide concentration slowly increased from 1900 1
- carbon dioxide concentration increased more rapidly from 1965  
*allow values from 1965 – 1975* 1

**[6]**

**4.**

- (a) bar drawn correctly 78 – 80 (%) 1
- (b) (i) (Mars has) no (green / living) plants / trees 1
- (ii) (argon) is unreactive / inert  
*accept argon is a noble gas*  
*ignore it is in Group 0* 1
- (c) (the amount of carbon dioxide has decreased because it has been) absorbed /  
 used by (green / living) plants / trees **or** used for photosynthesis  
*accept dissolved / absorbed by oceans or locked up in fossil fuels /  
 carbonate rocks* 1
- (d) the eruption of volcanoes 1

**[5]**

**5.**

- (a) sulfur dioxide 1
- (b) any **one** from:  
 • kills aquatic animals / plants  
 • damages limestone buildings / statues  
 • damage to forests 1
- (c) (sample) **C** 1
- contains most sulfur  
**or**  
 produces most sulfur dioxide 1
- (d)  $1 \times \frac{66.3}{22.1}$  1
- = 3 (kg) 1

*an answer of 3 (kg) scores 2 marks*

- (e) any **two** from:
- not easily detected
  - colourless  
*allow cannot see it*
  - odourless  
*allow cannot smell it*

2

[8]

6.

- (a) acid rain → sulfur dioxide 1
- global warming → carbon dioxide 1
- global dimming → carbon particles 1
- (b) (i) oxygen 1
- (ii) carbon monoxide 1
- (c) (i) decreasing  
*accept running out / none left* 1
- (ii) any **two** from:  
*it = coal*
- world needs (more) energy  
*accept population is increasing*  
*allow (greater) demand for coal / fuels / energy*
  - plentiful supply  
*accept readily available*  
*allow coal will 'last longer'*
  - (many) countries have coal
  - easy to find / extract
  - oil / gas is running out  
*accept need to use less oil / gas*  
*accept need to use it to replace oil / gas*
  - cheap **or** cheaper than oil

2

[8]

<b>7.</b>	<p>(a) (i) nitrogen (gas) <b>or</b> N<sub>2</sub> <i>if only the formula is given it must be correct in every detail</i></p>	1	
	<p>(ii) argon (gas) <b>or</b> Ar</p>	1	
	<p>(iii) oxygen (gas) <b>or</b> O<sub>2</sub></p>	1	
	<p>(b) vapour</p>	1	
	<p>evaporating</p>	1	
	<p>sea(s)</p>	1	
	<p>condenses</p>	1	
	<p>(c) volcanoes <b>or</b> volcanic activity <b>or</b> the sea(s) <i>allow carbonates(s) (rocks)</i> <i>do not credit inside</i></p>	1	<b>[8]</b>
<b>8.</b>	<p>(a) N<sub>2</sub></p>	1	
	<p>20–21% <i>accept an answer in this range</i></p>	1	
	<p>Ar</p>	1	
	<p>(b) (i) compound of carbon and hydrogen only <i>do <b>not</b> accept 'mixture'</i></p>	1	
	<p>(ii) Oxygen <b>or</b> O<sub>2</sub></p>	1	
	<p>(iii) exothermic <i>accept combustion <b>or</b> oxidation</i></p>	1	
	<p>(iv) <b>increases</b> greenhouse effect</p>	1	
	<p>global warming <b>or</b> example</p>	1	<b>[8]</b>

9.

(a) core

*ignore outer or inner*

1

mantle

1

(b) (i) carbon dioxide

*accept formula CO<sub>2</sub>*

1

oxygen

*accept formulae O<sub>2</sub> / O*

1

(ii) 4%

1

(iii) carbon dioxide has decreased / from 95% to 0%

1

oxygen has increased / from 0% to 21%

1

any **one** from:

(carbon dioxide decrease)

- carbon dioxide used during photosynthesis / by plants
- carbon dioxide dissolves in oceans
- carbon dioxide is locked up in rocks / carbonates / fossil fuels

(oxygen increase)

- oxygen released during photosynthesis / by plants

1