

# THE ATMOSPHERE 7

## MARK SCHEME

### Q1.

Question	Answer	Extra information	Marks
(i)	condensed	it = water vapour accept temperature went below 100°C / boiling point of water allow cooled to form liquid / water / rain do not accept evaporated	1
	formed the oceans / seas	ignore rain accept (water vapour) cooled and formed the ocean / sea for 2 marks	1
(ii)	any <b>two</b> from:  <ul style="list-style-type: none"><li>• used by (green) plants / algae</li><li>• changed into oxygen</li><li>• dissolved in oceans / seas</li><li>• (locked up) in carbonates / sedimentary rocks</li><li>• (locked up) in fossil fuels / named fossil fuel</li></ul>	ignore oxygen / nitrogen increased ignore reference to volcanoes / respiration accept photosynthesis / plants give out oxygen  accept (locked up) in shells / skeletons (of animals)	2
Total marks			4

### Q2.

Question	Answer	Extra information	Marks
(i)	0.97	extra ring drawn cancels the mark	1
(ii)	carbon dioxide / CO <sub>2</sub>		1
Total marks			2

### Q3.

Question	Answer	Extra information	Marks
(a)	sulfur dioxide / SO <sub>2</sub>	allow sulfur oxide	1
(b)	global dimming		1

(c)	oxygen / O <sub>2</sub>		1
(d)	(oil is a) limited resource / finite / non-renewable	accept running out of oil or wood is sustainable accept (burning oil) increases amount of carbon dioxide in the atmosphere / global warming or releases locked up carbon / global dimming / acid rain accept the oil (may become) too expensive	1
(e)	carbon dioxide produced (from burning wood) carbon dioxide used by plants / trees or for photosynthesis	ignore global warming  if no other mark awarded allow carbon emissions used by plants / trees or for photosynthesis for 1 mark	1 1
Total marks			6

#### Q4.

Question	Answer	Extra information	Marks
(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
Total marks			5

#### Q5.

Question	Answer	Extra information	Marks
	any <b>two</b> pairs from: carbon dioxide (1) causes global warming (1) or carbon (particles) / soot (1)	allow greenhouse effect / climate change / sea level rise / melting of polar ice caps allow particulates	4

	causes global dimming (1) or carbon monoxide (1) is toxic (1) or sulfur dioxide (1) causes acid rain (1)	allow blocks out sunlight / smog / prevents plant growth / causes breathing difficulties  allow kills plants / erosion / acidifies water	
Total marks			4

**Q6.**

0 marks	Level 1 (1–2 marks)	Level 2 (3–4 marks)	Level 3 (5–6 marks)
No relevant content	Statements based on diagrams	Description of how one change occurred	Descriptions of how at least two changes occurred
<p><b>Examples of chemistry points made in the response could include:</b></p> <p><b>Main changes</b></p> <ul style="list-style-type: none"> <li>oxygen increased because plants / algae developed and used carbon dioxide for photosynthesis / growth producing oxygen; carbon dioxide decreased because of this</li> <li>carbon dioxide decreased because oceans formed and dissolved / absorbed carbon dioxide; carbon dioxide became locked up in sedimentary / carbonate rocks and / or fossil fuels</li> <li>oceans formed because the Earth / water vapour cooled and water vapour in the atmosphere condensed</li> <li>continents formed because the Earth cooled forming a supercontinent / Pangaea which formed the separate continents</li> <li>volcanoes reduced because the Earth cooled forming a crust</li> </ul> <p><b>Other changes</b></p> <ul style="list-style-type: none"> <li>nitrogen formed because ammonia in the Earth's early atmosphere reacted with oxygen / denitrifying bacteria</li> </ul>			
<b>Total</b>			6

**Q7.**

Question	Answer	Extra information	Marks
	acid rain is caused by sulfur dioxide or oxides of nitrogen they react with/are neutralised by calcium carbonate or	allow consequences of acid rain second marking point is dependent on first marking point	1 1 1

	limestone <b>OR</b> global warming is caused by carbon dioxide carbon dioxide will react or dissolve in	allow greenhouse effect is caused by or allow consequences of global warming	
Total marks			3

**Q8.**

Question	Answer	Extra information	Marks
(a)(i)	nitrogen		1
(ii)	carbon dioxide		1
(iii)	because water boils at 100°C and the temperature on Venus is 460°C therefore any water on the surface would boil to form steam / water vapour / gas		1  1
(b)	any <b>three</b> from: • by photosynthesis • by dissolving in oceans • by the formation of (calcium) carbonate or limestone • by the formation of oil or coal	accept by the formation of fossil fuels	3
(c)(i)	0.0317 (%)		1
(ii)	the percentage of carbon dioxide has increased		1
(iii)	any <b>one</b> from: • burning of fossil fuels • deforestation • release of locked up carbon dioxide		1
Total marks			10