Comp + Evolution of the Earth atm

Mark Scheme 1

Level	GCSE (9-1)
Subject	Combined Science: Trilogy - Chemistry
Exam Board	AQA
Topic	5.9 Chemistry of the Atmosphere
Sub-Topic	Comp + Evolution of the Earth atm
Difficulty Level	Bronze Level
Booklet	Mark Scheme 1

Time Allowed: **42 minutes**

Score: **/40**

Percentage: **/100**

Grade Boundaries:

M1.(a) dissolved

in this order

1

carbonates

1

(b) Photosynthesis

1

(c) water

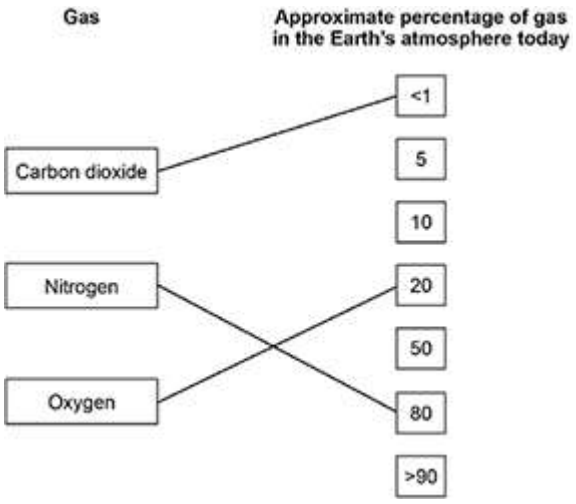
In this order

oxygen

both needed for the mark

1

(d)



Extra lines from Gas negate the mark

3

(e) increases global temperatures

1

(f) use renewable energy supplies

1

(g) correct reason, eg:

- renewable technology underdeveloped
- disagreement between countries

1

[10]

M2.(a) carbon dioxide (decreased) **one** from:

1 *mark for one reason for each gas*

- photosynthesis
- formation of (sedimentary) rocks
- formation of fossil fuels
- dissolved in oceans

ignore respiration

1

nitrogen (increased) **one** from:

- volcanoes / volcanic activity
- ammonia reacted with oxygen

1

oxygen (increase):

- photosynthesis

1

(b) 1960

1

because the rise became much steeper

1

(c) 362 − 320 = 42 (ppm)

both readings from graph

1

42 ÷ 320 × 100

1

= 13(%)

1

(d) **Level 2 (3–4 marks):**
A detailed and coherent explanation of how the rise in carbon dioxide levels affect the environment.

Level 1 (1–2 marks):
Simple relevant statements are made about the effects of rise in carbon dioxide levels
on the environment. The account is incomplete or inaccurate and lacks coherence.

0 marks:
No relevant content.

Indicative content

consequences of rise in carbon dioxide levels
- carbon dioxide is a greenhouse gas
- it stops infrared radiation escaping from the Earth
- warming up the atmosphere
- rise in level warms atmosphere up more
- so leads to global warming
- leading to climate change

effects on environment:
- extreme weather fluctuations
- rise in sea levels
- effects on human habitats
- effects on animal habitats
- decrease in biodiversity
- effects on food producing capacity.

4

[12]

M3.(a) argon / Ar

1

(b) (i) 0

1

(ii) unreactive

1

(c) (i) 94.96(%)

1

(ii) any **two** from:

- plants or photosynthesis
- absorbed in oceans / *seas*
  *allow oceans store **or** take in **or** dissolve carbon dioxide*
- locked up in (sedimentary) rocks
- locked up in fossil fuels

2

[6]

M4. (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]

M5. (a) crust

ignore Earth's

1

core

ignore inner and/or outer

1

(b) bar chart

1

all heights are correct

accept correctly plotted points

1

all labels are correct for nitrogen, oxygen and other / argon

1

(c) (i) decomposed

1

(ii) global warming

1

[7]