

# The Periodic Table

## Mark Scheme 1

<b>Level</b>	GCSE (9-1)
<b>Subject</b>	Combined Science: Trilogy - Chemistry
<b>Exam Board</b>	AQA
<b>Topic</b>	5.1 Atomic Structure and the Periodic Table
<b>Sub-Topic</b>	The Periodic Table
<b>Difficulty Level</b>	Bronze Level
<b>Booklet</b>	Mark Scheme 1

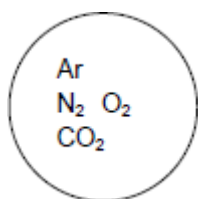
**Time Allowed:** 58 minutes

**Score:** /55

**Percentage:** /100

**Grade Boundaries:**

<b>M1.(a)</b>	Carbon and silicon	1
(b)	Atomic number	1
(c)	Hydrogen / fluorine / chlorine are not in Group 1 of the periodic table <b>or</b> Hydrogen and fluorine / chlorine are not in the same group of the periodic table	1
	Lithium / sodium / potassium are in Group 1 of the periodic table	1
(d)	plum pudding model has a single ball of positive charge and nuclear model has positive charges in the centre / nucleus	1
	plum pudding model has electrons in random positions and nuclear model has electrons in fixed positions	1
	plum pudding model has no nucleus and the nuclear model has a nucleus	1
	plum pudding model has no neutrons and the nuclear model has neutrons in the nucleus	1
(e)		



1

(f) Covalent bond

1

[10]

**M2.(a)** LiOH (aq)

*this order*

1

H<sub>2</sub> (g)

1

(b) **C**

1

(c) **A and D**

1

(d) point x at -10 °C

1

point • at +150 °C

1

(e) substance **B** will not reach its boiling point of 190 °C

1

because the boiling point of water is only 100 °C

1

- (f) there is too much substance **B** to melt instantly.

*allow answers based on thermal conductivity or temperature gradient from the wall of the test tube to the thermometer*

1

[9]

**M3.(a)** Desalination

1

Sterilising

1

- (b) Chloride ion

1

- (c) correct bar for  $\text{NO}_3^-$

1

- (d) **D**

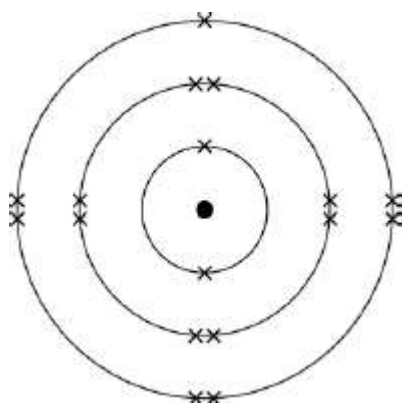
1

- (e) any **two** from:

- people have the right to choose (opinion)
- ethical / moral question
- cannot be tested by experiment

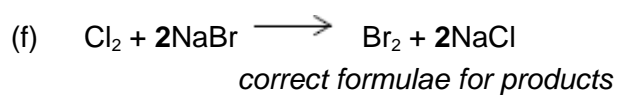
2

- (f)  $\frac{1.5}{4.0} \times 100$  1
- (g) the percentage tooth decay increases with age 1
- by 4 % for each increasing age group 1
- (h) reduces tooth decay (for all age groups) 1
- greater reduction in older people 1
- [12]
- M4.(a)** the melting point increases 1
- (b) 337 °C  
allow an answer in the range 278 °C to 337 °C 1
- (c) bromine 1
- (d) Group 7 1
- (e)



7 electrons in outer shell

1



1

*correct balancing*

1

(g) fluorine

1

(because it is) more reactive than chlorine  
*allow because it is the most reactive element*

1

[9]

M5.(a) Y

1

(b) W

1

(c) V

1

(d) W

1

(e) X

1

[5]

**M6.(a)** gold

1

(b) atom (s)

1

(c) (i) protons

*any order*

*allow proton*

1

neutrons

*allow neutron*

1

(ii) 3 / three

1

(d) (i) Al

*ignore any numbers / charges*

1

(ii) any **two** from:

- limited resource
- expensive in terms of energy / mining
- effects on the environment, such as, landfill, atmospheric pollution, quarrying

*allow uses a lot of energy to extract.*

2

(e) resistant to corrosion

1

does not react (with water or food)

*allow **one** mark for low density with a suitable reason given*

**1**

**[10]**