AQA GCSE Combined Science - Trilogy | 8464

SPECIFICATION POINT 5.1.2.2

Development of the periodic table

Past-paper questions

Tier	**Higher**
Question groups	**3**
Available paper years	**2019–2021**

Using this booklet

1. Answer the questions in order and show your working.
2. Original question numbers and marks are retained.
3. Print at actual size (100%) for measuring questions.
4. Use the companion answer booklet to check your work.

Name: _____ **Date:** _____

Whole questions are retained for context, so some parts assess other specification points. Current and legacy sources are labelled. Continue on extra paper if needed.

5.1.2.2 Development of the periodic table

Question 01

June 2019 | 8464/C/1H | Original Q4

0 4 This question is about elements in the periodic table.

0 4 . 1 What order did scientists use to arrange elements in early periodic tables?

[1 mark]

0 4 . 2 In the early periodic tables some elements were placed in the wrong groups.

Mendeleev overcame this in his periodic table.

Give **one** way Mendeleev did this.

[1 mark]

Question 4 continues on the next page

5.1.2.2 Development of the periodic table

Question 01 · continued

Table 2 shows the boiling points of fluorine, chlorine and bromine.

Table 2

Element	Boiling point in °C
Fluorine	–186
Chlorine	–34
Bromine	+59

0 4 . 3 Explain why the boiling points in **Table 2** are low.

[2 marks]

0 4 . 4 Explain the trend in the boiling points in **Table 2**.

[3 marks]

5.1.2.2 Development of the periodic table

Question 01 · continued

0 4 . 5 Explain why neon is unreactive.

Give the electronic structure of neon in your answer.

[2 marks]

0 4 . 6 How many atoms are there in 1 g of argon?

The Avogadro constant is 6.02×10^{23} per mole.

Relative atomic mass (A_r): Ar = 40

[2 marks]

Number of atoms in 1 g = _____

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5.1.2.2 Development of the periodic table

Question 02

November 2020 | 8464/C/1H | Original Q7

0 7 This question is about elements.

Caesium is in Group 1 of the periodic table.

0 7 . 1 Explain what happens to caesium atoms and to oxygen atoms when caesium reacts with oxygen to produce caesium oxide.

You should answer in terms of electrons.

[4 marks]

0 7 . 2 Explain why caesium is more reactive than sodium.

You should answer in terms of electrons.

[4 marks]

5.1.2.2 Development of the periodic table

Question 02 · continued

0 7 . 3 **Figure 6** shows part of Mendeleev's periodic table.

Figure 6

16 **O**	19 **F**
32 **S**	35.5 **Cl**
79 **Se**	80 **Br**
128 **Te**	127 **I**

Explain why the early periodic tables placed iodine (I) before tellurium (Te), but then Mendeleev placed tellurium before iodine.

[3 marks]

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5.1.2.2 Development of the periodic table

Question 03

November 2021 | 8464/C/1H | Original Q1

0 1 This question is about the periodic table.

0 1 . 1 **Figure 1** shows part of Mendeleev's version of the periodic table.

Figure 1

H							
Li	Be	B	C	N	O	F	
Na	Mg	Al	Si	P	S	Cl	
K Cu	Ca Zn		Ti	V As	Cr Se	Mn Br	Fe Co Ni
Rb Ag	Sr Cd	Y In	Zr Sn	Nb Sb	Mo Te	I	Ru Rh Pd

Which group of elements had **not** been discovered when Mendeleev's version of the periodic table was published?

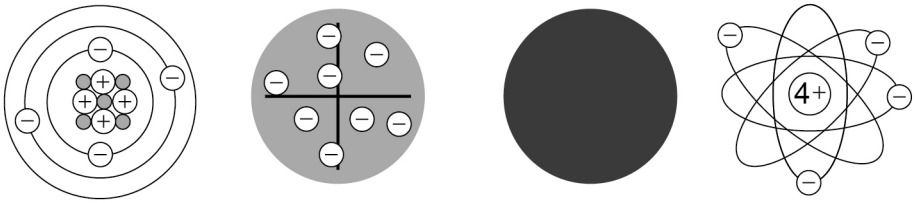
[1 mark]

5.1.2.2 Development of the periodic table

Question 03 · continued

Figure 2 represents different models of the atom.

Figure 2



A **B** **C** **D**

0 1 . 2 Which model represents the plum pudding model?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

0 1 . 3 Which model resulted from Chadwick's experimental work?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

Question 1 continues on the next page

5.1.2.2 Development of the periodic table

Question 03 · continued

Potassium has different isotopes.

0 1 . 4 What is meant by 'isotopes'?

You should refer to subatomic particles.

[2 marks]

0 1 . 5 **Table 1** shows the mass numbers and the percentage abundance of two isotopes of potassium.

Table 1

Mass number	Percentage abundance
39	93.1
41	6.9

Calculate the relative atomic mass (A_r) of potassium.

Give your answer to 1 decimal place.

[3 marks]

Relative atomic mass (1 decimal place) = _____

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