

(Group 1 – Alkali metals)

Q1.a)(2018)

This question is about elements in Group 1.

A teacher burns sodium in oxygen.

Complete the word equation for the reaction.

[1 mark]

sodium + oxygen → _____

Q1.b)(2018)

What is the name of this type of reaction?

[1 mark]Tick **one** box.

Decomposition

☐

Electrolysis

☐

Oxidation

☐

Precipitation

☐

Q1.c)(2018)

The teacher dissolves the product of the reaction in water and adds universal indicator.

The universal indicator turns purple.

What is the pH value of the solution?

[1 mark]Tick **one** box.

1	
---	--

4	
---	--

7	
---	--

13	
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Q1.d)(2018)

The solution contains a substance with the formula NaOH

Give the name of the substance.

[1 mark]

Q2.a)(2018)

The melting points of the elements in Group 1 show a trend.

Table 6 shows the atomic numbers and melting points of the Group 1 elements.

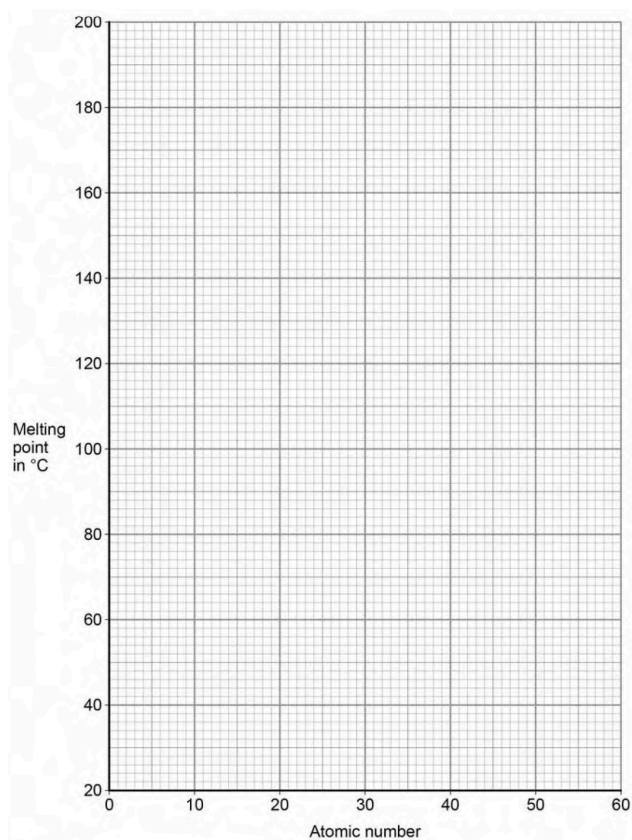
Table 6

Element	Atomic number	Melting point in °C
Lithium	3	181
Sodium	11	98
Potassium	19	63
Rubidium	37	X
Caesium	55	29

Plot the data from **Table 6** on **Figure 11**.

[2 marks]

Figure 11



Q2.b) (2018)

Predict the melting point, **X**, of rubidium, atomic number 37Use **Figure 11**.**[1 mark]**

Melting point = _____ °C

Q3. (2019)

Sodium is in Group 1 of the modern periodic table.

Describe what you would see when sodium reacts with chlorine.

[2 marks]

Q4. (2021)

This question is about Group 1 elements.

Complete **Table 2** to show the electronic structure of a potassium atom.**[1 mark]****Table 2**

Atom	Number of electrons	Electronic structure
Sodium	11	2,8,1
Potassium	19	

Q5. (2021)

Why do Group 1 elements have similar chemical properties?

[1 mark]Tick (✓) **one** box.

They have the same number of electron shells.

☐

They have the same number of outer shell electrons.

☐

They have two electrons in the first shell.

☐

Q6.a) (2021)

Table 3 shows observations made when lithium, potassium and rubidium react with water.

Table 3

Element	Observations
Lithium	Bubbles slowly Floats Moves slowly
Sodium	1 _____ 2 _____
Potassium	Bubbles very quickly Melts into a ball Floats Moves very quickly Flame
Rubidium	Sinks Melts into a ball Explodes with a flame

Give **two** observations you could make when sodium reacts with water.

Write your answers in **Table 3**.

[2 marks]

Q6.b) (2021)

How does the reactivity of the elements change going down Group 1?

[1 mark]

Q6.c) (2021)

Give **two** ways in which the observations in **Table 3** show the change in reactivity going down Group 1.

[2 marks]

1 _____

2 _____

Q7. (2021)

Which gas is produced when Group 1 elements react with water?

[1 mark]

Tick (✓) **one** box.

Carbon dioxide

☐

Hydrogen

☐

Nitrogen

☐

Oxygen

☐

Q8. (2022)

Why do the elements in Group 1 of the modern periodic table have similar chemical properties?

[1 mark]

Tick (✓) **one** box.

The elements all form negative ions.

☐

The elements all have one electron in the outer shell.

☐

The elements all have the same number of shells.

☐

Q9.a) (2022)

Table 3 shows the melting points of the first five elements going down Group 1.

Table 3

Element	Melting point in °C
Lithium	181
Sodium	98
Potassium	X
Rubidium	39
Caesium	29

Predict value X.

[1 mark]

X = _____ °C

Q9.b) (2022)

Give **one** observation you would see when a small piece of potassium is added to water.

[1 mark]

Q10.(2022)

Give **two** differences between the physical properties of the elements in Group 1 and those of the transition elements.

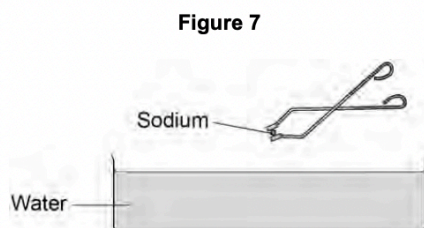
[2 marks]

1

2

Q11.(2023)

Figure 7 shows a piece of sodium being added to water.



Give **two** observations that could be seen when sodium is added to water.

[2 marks]

1

2

Q12.(2024)

Sodium and potassium are in Group 1 of the periodic table.

Give **one** similarity and **one** difference between the electronic structures of sodium and potassium.

[2 marks]

Similarity

Difference

Q13.(2024)

Group 1 elements react with water.

Give **two** observations made when potassium reacts with water.

[2 marks]

1 _____

2 _____

Q14.(2024)

Potassium hydroxide solution is produced when potassium reacts with water.

What is the colour of universal indicator when added to potassium hydroxide solution?

Give **one** reason for your answer.

[2 marks]

Colour of universal indicator _____

Reason _____
