



GCSE Chemistry

Periodic Table

Question Paper

Time available: 60 minutes

Marks available: 55 marks

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(e) Which element has three electron shells?

Tick (✓) **one** box.

J

L

M

Q

R

(1)

(f) In the 1860s scientists were trying to organise elements.

Figure 2 shows the table published by John Newlands in 1865.

The elements are arranged in order of their atomic weights.

Figure 2

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

Figure 3 shows the periodic table published by Dmitri Mendeleev in 1869.

Figure 3

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

Mendeleev's table became accepted by other scientists whereas Newlands' table was not.

Evaluate Newlands' and Mendeleev's tables.

You should include:

- a comparison of the tables
- reasons why Mendeleev's table was more acceptable.

Use **Figure 2** and **Figure 3** and your own knowledge.

(6)
(Total 11 marks)

(iv) Which **two** statements are correct?

Tick (✓) **two** boxes.

Iron has a higher density than potassium.

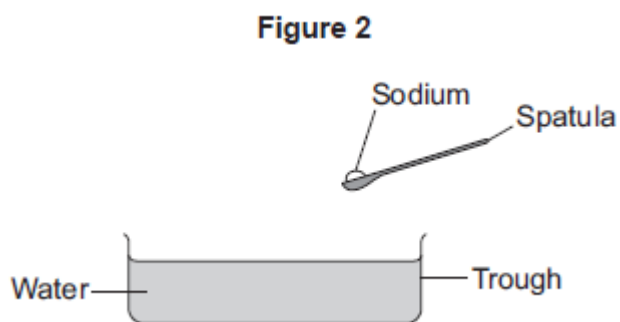
Iron is softer than potassium.

Iron reacts vigorously with water.

Iron forms ions that have different charges.

(2)

(c) **Figure 2** shows sodium being put into water.



Describe **three** observations that can be seen when sodium is put into water.

1. _____

2. _____

3. _____

(3)

(Total 11 marks)

4.

The diagram shows the chemical symbols of five elements in the periodic table.

Group 1		2				3	4	5	6	7	0
											He
							C				
Na										Cl	

(a) Choose the correct chemical symbol to complete each sentence.

(i) The element that is an alkali metal is _____ .

(1)

(ii) The element that is a transition metal is _____ .

(1)

(iii) The element in Group 4 is _____ .

(1)

(iv) The element with a full outer energy level (shell) of electrons is

_____ .

(1)

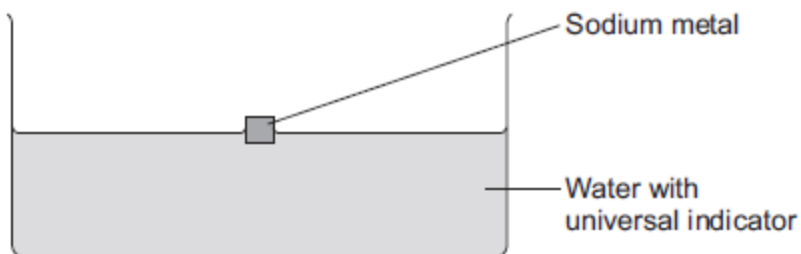
(b) Which other element goes in the shaded box?

(1)

(Total 5 marks)

(b) A teacher put a cube of sodium metal into water containing universal indicator, as shown in **Figure 2**.

Figure 2



The equation for the reaction is:



(i) The sodium floated on the surface of the water. The universal indicator turned purple.

Give **three other** observations that would be seen during the reaction.

1. _____

2. _____

3. _____

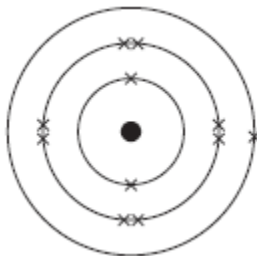
(3)

(ii) Name the ion that made the universal indicator turn purple.

(1)

(c) **Figure 3** represents the electronic structure of a sodium atom.

Figure 3



In the space below, draw the electronic structure of a sodium ion. Include the charge on the ion.

(2)

(Total 11 marks)

6.

In 1869, Dmitri Mendeleev produced his periodic table of the elements.

Mendeleev placed the alkali metals in the same group.

(a) What evidence did Mendeleev use to decide that the alkali metals should be in the same group?

(1)

(b) Describe how the elements in the modern periodic table are arranged:

(i) in terms of protons

(1)

(ii) in terms of electrons.

(1)

(c) State **two** properties of transition elements that make them more useful than alkali metals for making water pipes.

(2)

(d) Describe and explain the trend in reactivity of the alkali metals (Group 1).

(4)

(Total 9 marks)