

# ATOMS AND THE PERIODIC TABLE

## END OF TOPIC ASSESSMENT



FOUNDATION TIER

Tick one box to choose the correct answer

1) What elements are found in the compound water (H<sub>2</sub>O)?

- Hydrogen and oxygen
- Helium and oxygen
- Hydrogen and nitrogen

1 mark

2) Which of the following is a metal element?

- Iron
- Carbon
- Hydrogen

1 mark

**Answer the question for your course**

**Combined (double science) or separate subject (triple science)**

**3) Combined** - The centre of an atom is called :

- The shell
- The nucleus
- The molecule

**3) Separate** - Which one of the following elements is a non-metal?

- Aluminium
- Oxygen
- Iron

1 mark only

4) The grid below contains information on three groups from the periodic table. Fill in the blank spaces using the words provided in the box, this will correctly match the group names to their group number and reactivity.

The Halogens  
 Unreactive  
 Group 8  
 The Metals  
 Group 2  
 Group 1  
 Reactive

Group Name	Group Number	Reactivity
The Noble Gases	Group 8	_____
The Alkali Metals	_____	Reactive
_____	Group 7	_____

1 mark

1 mark

1 mark

(Total 3 marks)

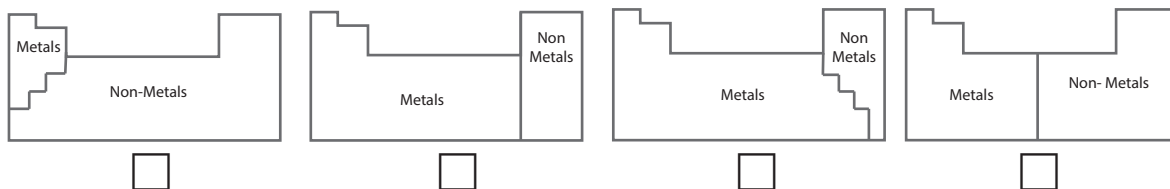
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5) The Periodic Table can be split up into two large groups. Which of the diagrams below show the correct location of these two groups: the metals and the non-metals?



1 mark

6) Which of the following charges are found on the protons within the nucleus of an atom?:

- +1
- 10
- 0

1 mark

7) What is the maximum number of electrons the first shell of an atom can hold?

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1 mark

8) Group 8 of the Periodic Table contains a number of unreactive elements. Using a copy of the Periodic Table, choose one element from Group 8 and write down its chemical symbol below.

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1 mark

9) A substance that is able to dissolve in a liquid is said to be:

- Soft
- Soluble
- A solid

1 mark

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10) Which one of the following has the largest mass?

- A helium atom
- A hydrogen atom
- A carbon dioxide molecule

1 mark

11) Sodium chloride is an ionic salt (also called table salt). It is made by reacting two elements together. The elements form a strong chemical bond with one another. Choose the best description of sodium chloride from the following options:

- A mixture
- A non-metal
- A compound

1 mark

12) A dish containing a blue solution is placed on a warm window-sill for five days. Blue crystals formed in the dish. Which of the following might have been the blue solution?

- Copper sulphate solution
- A mixture of iron filings and water
- Sugar solution

1 mark

13) Standard form is a way of writing long numbers quickly. This is especially useful to scientists when describing very small or very large objects.

**Below is the diameter of an atom. It has been recorded in standard form.**

This number has been written incorrectly in **one place**. Circle the part of the number where the mistake has been made and explain the mistake.

$$1.2 \times 10^{10} \text{ m}$$

1 mark

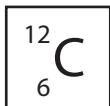
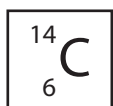
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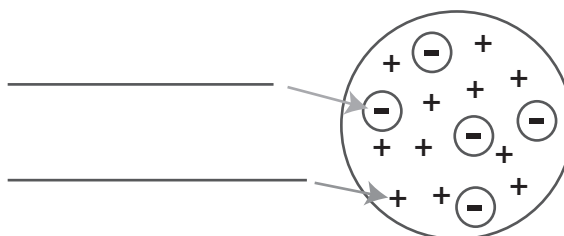
14) The two types of carbon atoms represented in the symbols below are called isotopes. They each have a different number of a certain type of particle in their nucleus. What particle is this?



\_\_\_\_\_ 1 mark

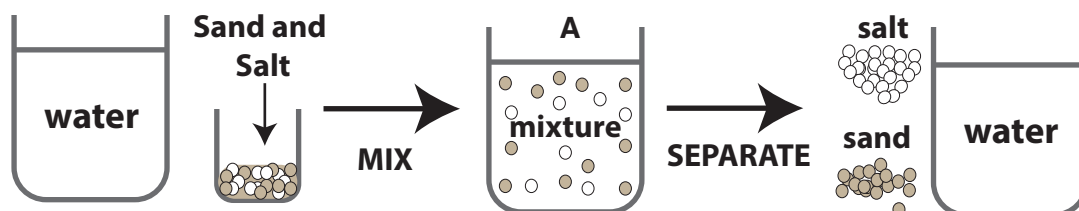
15) A scientist called J.J. Thompson came up with the 'Plum Pudding' model (see diagram below). Explain what the model was supposed to represent and label the  $\ominus$  and  $\oplus$  symbols on the diagram.

The Plum Pudding is a model of an \_\_\_\_\_



2 marks

16) The mixture **A** shown below consists of salt and sand stirred into water.



Put these sentences in order of 1 to 5 to explain the separation process:

- The salt dissolves in the water, but the sand does not.
- Mix the water with the salt and sand, and stir.
- Use filter paper and a filter funnel to filter out the insoluble sand.
- Salt crystals will remain in the beaker.
- Using a Bunsen burner, heat the filtrate to evaporate the water.

Total 5 marks

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17) The Periodic Table can be split into a number of different groups. The 7th group of the Periodic Table is shaded in the diagram. What is the name for this group?

- The gases
- The halogens
- The metals



1 mark

18) Study the symbol for magnesium and complete the outer electron shell on the diagram.

$$\begin{matrix} 24 \\ 12 \end{matrix} \text{Mg}$$

Atom diagram

● = nucleus of the atom

X = electrons

1 mark

19) Two ions from the list provided come from the same group in the Periodic Table. Their chemical symbols have been replaced with the letters A to G. Circle the ions which belong to the same group of the Periodic Table. How can you tell?

$$\begin{matrix} 7 \\ 3 \end{matrix} \text{A}^{1+}$$

$$\begin{matrix} 23 \\ 11 \end{matrix} \text{F}$$

$$\begin{matrix} 9 \\ 4 \end{matrix} \text{C}^{2+}$$

$$\begin{matrix} 11 \\ 5 \end{matrix} \text{E}^{3+}$$

$$\begin{matrix} 23 \\ 11 \end{matrix} \text{G}^{1+}$$

1 mark

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**Answer the question for your course**

**Combined (double science) or separate subject (triple science)**

**20) Combined** - The reaction of the metal potassium with water makes two products. The first product is alkaline and the second product reacts violently with oxygen in the presence of a naked flame. Name the 2 products:

First Product: \_\_\_\_\_

Second Product: \_\_\_\_\_

**20) Separate** - Name one transition metal and describe a common use for it.

Transition metal: \_\_\_\_\_

Common use: \_\_\_\_\_

2 marks  
only

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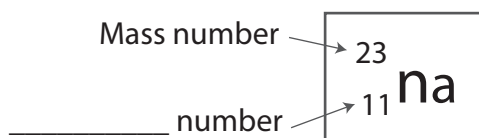
## END OF TOPIC ASSESSMENT



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**Where possible use full sentences to answer this question**

21a) A Periodic Table entry for sodium is shown below, fill in the black space on the labelling.



1 mark

b) Calculate the number of protons, neutrons and electrons in an atom of sodium.

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2 marks

c) The scientist who wrote this entry for sodium has made a mistake. Find the mistake and write the correct symbol with its numbers in the box below. The scientist also states that the element is in Group 2 of the Periodic Table. Is she correct? Explain your answer using full sentences.

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2 marks

d) Magnesium is less reactive than sodium and forms an  $Mg^{2+}$  ion. If magnesium is reacted with chlorine from Group 7 of the Periodic Table it forms the ionic compound magnesium chloride. A chloride ion always forms a negative  $Cl^{-}$  ion. Complete the formula for this compound (the formula should show the ratio of the atoms seen in the compound).



1 mark  
(Total 6 marks)

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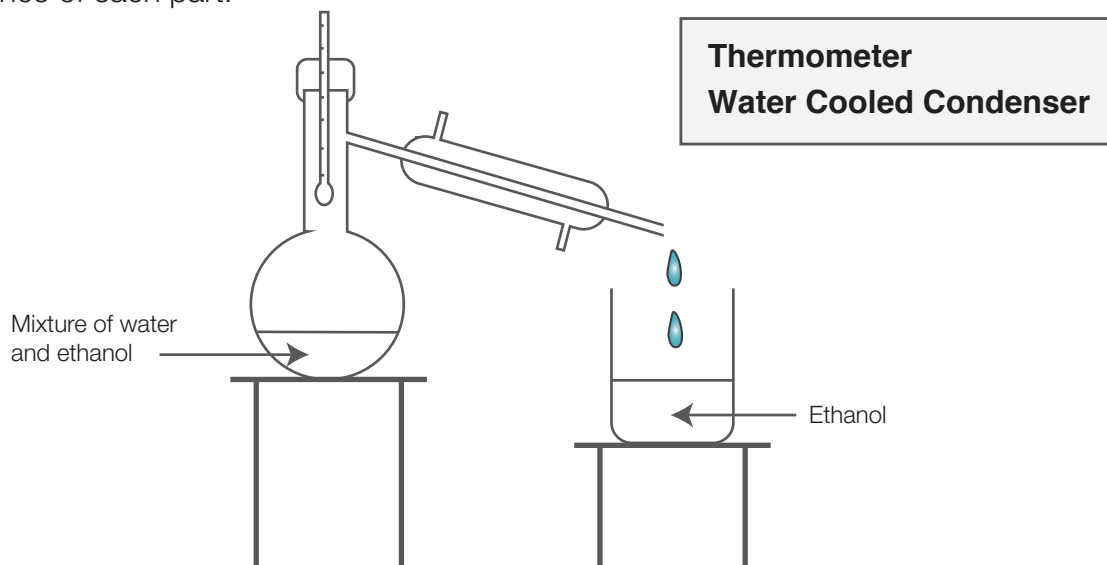
## END OF TOPIC ASSESSMENT



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### Answer in full sentences

22a) Label the equipment in the diagram using the words in the box below and explain the importance of each part.



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4 marks

b) A mixture of water and ethanol is separated using the equipment shown above. Explain why different liquids can be separated using this equipment and name the basic process.

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2 marks  
(Total 6 marks)

**Assessment Total : 40 Marks**



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