

**AQA - Atomic structure – GCSE 2022 Chemistry**

1. *June/2022/Paper\_8462/1F/No.1*

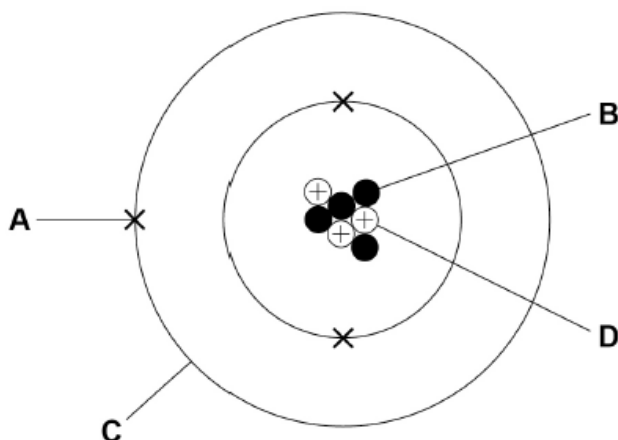
0 1

This question is about atoms.

0 1 . 1

Figure 1 represents an atom of an element.

Figure 1



Draw **one** line from each name to the correct label.

[2 marks]

| Name  | Label   |
|---|---|
| <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Neutron</div> | <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">A</div> |
| <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Proton</div>  | <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">B</div> |
|   | <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">C</div> |
|   | <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">D</div> |

0 1 . 2 An atom of element Y has:

- an atomic number of 9
- a mass number of 19.

Give the number of electrons and the number of neutrons in this atom.

Choose answers from the box.

[2 marks]

|   |   |    |    |    |
|---|---|----|----|----|
| 1 | 9 | 10 | 19 | 28 |
|---|---|----|----|----|

Number of electrons \_\_\_\_\_

Number of neutrons \_\_\_\_\_

**Table 1** shows information about two isotopes of element **Z**.

**Table 1**

|                  | Mass number | Percentage abundance (%) |
|------------------|-------------|--------------------------|
| Isotope <b>A</b> | 39          | 93.3                     |
| Isotope <b>B</b> | 41          | 6.7                      |

**0 1 . 3** Calculate the relative atomic mass ( $A_r$ ) of element **Z**.

Use **Table 1** and the equation:

$$A_r = \frac{(\text{mass number} \times \text{percentage}) \text{ of isotope } \mathbf{A} + (\text{mass number} \times \text{percentage}) \text{ of isotope } \mathbf{B}}{100}$$

Give your answer to 3 significant figures.

**[3 marks]**

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$A_r$  (3 significant figures) = \_\_\_\_\_

0 1 . 4 Suggest the identity of element **Z**.

Use the periodic table.

[1 mark]

Element **Z** \_\_\_\_\_

0 1 . 5 Complete the sentence.

Choose the answer from the box.

[1 mark]

electrons

neutrons

protons

Isotopes of the same element have different mass numbers because the isotopes have different numbers of \_\_\_\_\_.

2. June/2022/Paper\_8462/1F/No.2

0 2

This question is about elements, compounds and mixtures.

0 2 . 1

Which type of substance is hydrogen?

[1 mark]

Tick (✓) **one** box.

Element

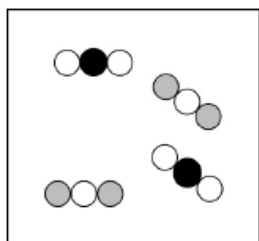
Compound

Mixture

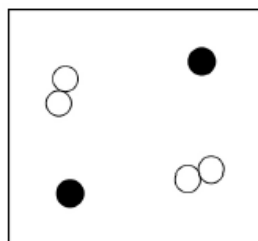
The diagrams in **Figure 2** represent different substances.

● ● and ○ represent atoms of three different elements.

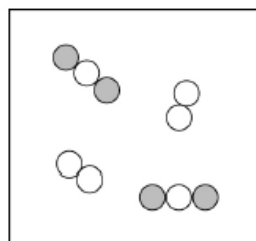
**Figure 2**



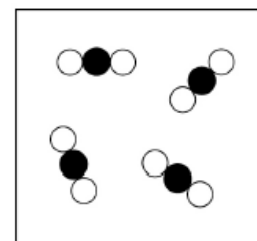
A



B



C



D

Use **Figure 2** to answer questions 02.2 and 02.3.

0 2 . 2

Which diagram represents a mixture of compounds?

[1 mark]

A

B

C

D

0 2 . 3

Which diagram represents a mixture of elements?

[1 mark]

A

B

C

D

Substances can be separated from mixtures by using different methods.

0 2 . 4 Complete the sentence.

[1 mark]

Sand can be separated from a mixture of sand and water by

\_\_\_\_\_.

A mixture of four liquids was fractionally distilled.

Figure 3 shows the apparatus used.

Figure 3

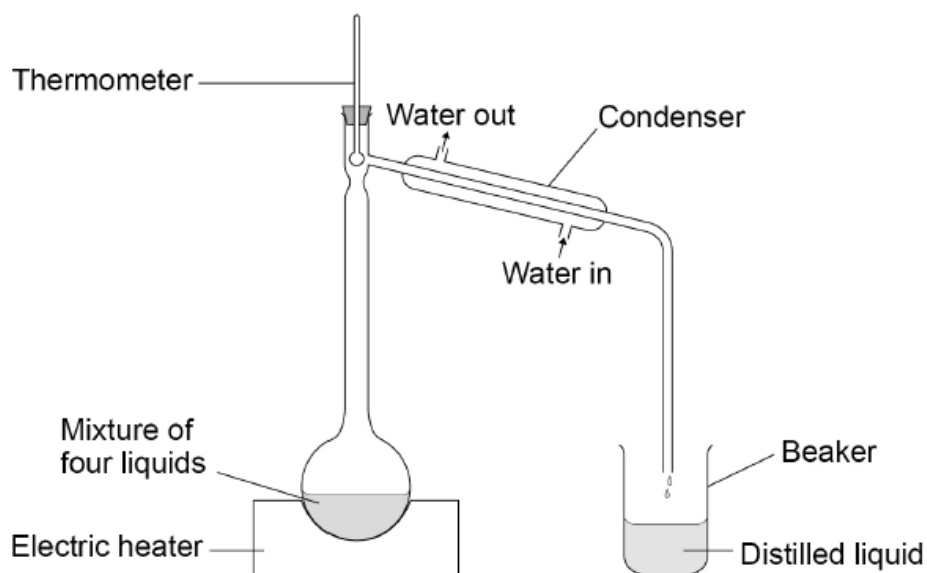


Table 2 shows the boiling points of the four liquids in the mixture.

Table 2

| Liquid | Boiling point in °C |
|--------|---------------------|
| A      | 97                  |
| B      | 138                 |
| C      | 78                  |
| D      | 118                 |

0 2 . 5

Which liquid in **Table 2** would distil and be collected in the beaker first?

[1 mark]

Liquid \_\_\_\_\_

0 2 . 6

Suggest what would happen to the temperature of the water as the water flows through the condenser.

[1 mark]

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0 2 . 7

Describe how to obtain sodium chloride crystals from sodium chloride solution by crystallisation.

[2 marks]

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