

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

1. June/2022/Paper\_8464/C/1F/No.4

0 4

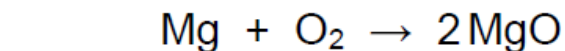
This question is about elements and compounds.

0 4 . 1

Magnesium and oxygen react to produce magnesium oxide.

Balance the equation for the reaction.

[1 mark]



0 4 . 2

Suggest **one** safety precaution that should be taken when heating magnesium and oxygen.

[1 mark]

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0 4 . 3

Calculate the relative formula mass ( $M_r$ ) of magnesium fluoride ( $\text{MgF}_2$ ).Relative atomic masses ( $A_r$ ): F = 19    Mg = 24

[2 marks]

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Relative formula mass ( $M_r$ ) = \_\_\_\_\_

0 4 . 4

Argon is a noble gas.

Explain why **no** product is formed when magnesium and argon are heated together.

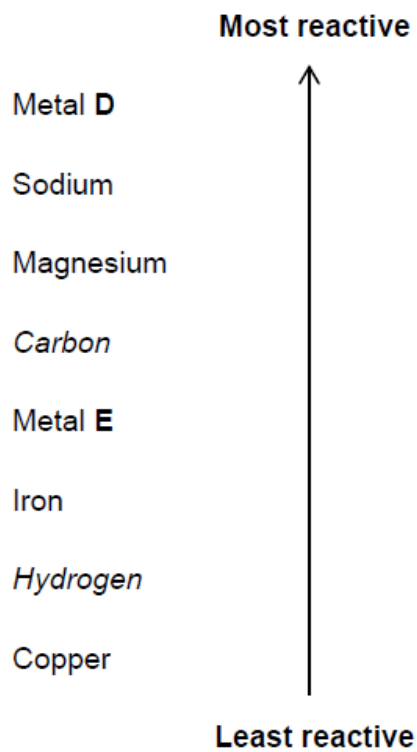
[2 marks]

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0 4 . 5 Figure 10 shows a reactivity series.

Figure 10



Draw **one** line from each metal to the method used to extract that metal.

Use **Figure 10**.

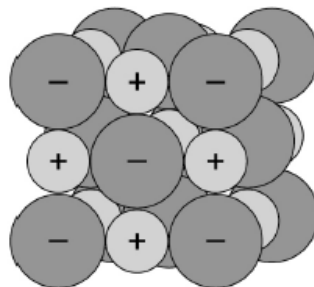
[2 marks]

| Metal          | Method used to extract that metal                     |
|----------------|---|
|                | Extracted by electrolysis of a molten ionic compound. |
| Metal <b>D</b> | Extracted from its oxide by reduction with carbon.    |
|                | Extracted from its oxide by reduction with hydrogen.  |
| Metal <b>E</b> | Removed from the Earth as the metal itself.           |

A substance conducts electricity when it has charged particles that are free to move.

0 4 . 6 Figure 11 represents the structure of sodium chloride.

Figure 11



Sodium chloride

Explain why sodium chloride conducts electricity when molten but **not** when solid.

[3 marks]

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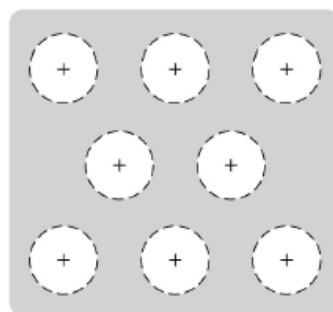
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0 4 . 7 Figure 12 represents the structure of sodium metal.

Figure 12



Sodium metal

Explain why sodium metal conducts electricity when solid.

[2 marks]

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## 2. June/2022/Paper\_8464/C/1H/No.7

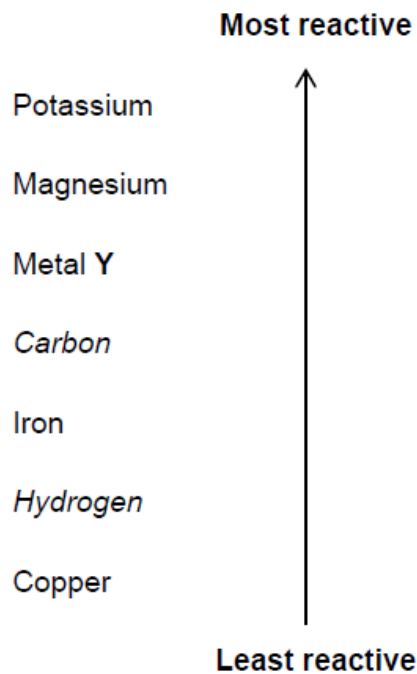
0 7

This question is about elements and compounds.

0 7 . 1

Figure 8 shows a reactivity series.

Figure 8



Give the method and conditions used to extract metal Y from a compound of metal Y.

**[2 marks]**

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Sodium reacts with titanium chloride ( $\text{TiCl}_4$ ) to produce titanium.

0 7 . 2 Complete the equation.

You should balance the equation.

[2 marks]



0 7 . 3 The reaction between sodium and titanium chloride is a redox reaction.

Write a half-equation to show that sodium is oxidised in this reaction.

[2 marks]

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Sodium metal and sodium chloride are both able to conduct electricity.

0 7 . 5

Describe how sodium metal conducts electricity.

[2 marks]

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0 7 . 6

Explain how sodium chloride can conduct electricity.

[3 marks]

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