

AQA – Chemical bonds, ionic, covalent and metallic – GCSE 2022 CS Chemistry

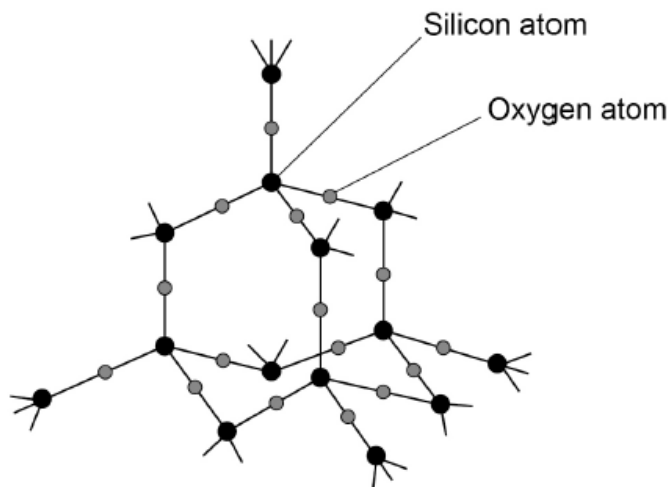
1. June/2022/Paper_8464/C/1F/No.3

0 3

This question is about structure and bonding.

Figure 6 represents part of the structure of silicon dioxide.

Figure 6



0 3 . 1

What type of structure is silicon dioxide?

[1 mark]

Tick (✓) **one** box.

Giant covalent

Ionic lattice

Simple molecular

0 3 . 2

Each oxygen atom forms two bonds.

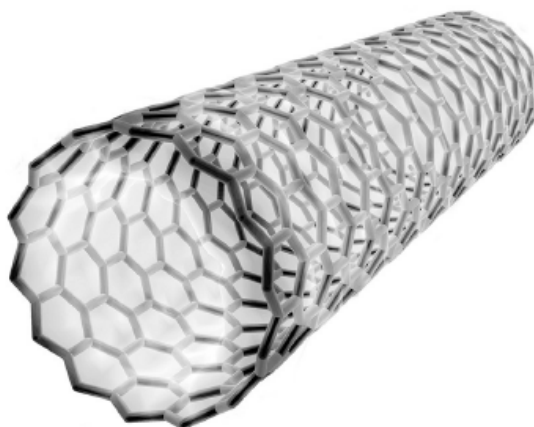
What is the number of bonds formed by each silicon atom?

Use Figure 6.

[1 mark]

Figure 7 represents part of a fullerene.

Figure 7



0 3 . 3 Complete the sentence.

Choose the answer from the box.

[1 mark]

hexagons

octagons

squares

triangles

The structure of fullerenes is based on _____.

0 3 . 4 Complete the sentence.

Choose the answer from the box.

[1 mark]

carbon

hydrogen

oxygen

The fullerene molecule shown in **Figure 7** is made from atoms of _____.

0 3 . 5 What is the fullerene molecule shown in **Figure 7** used for?

[1 mark]

Tick (✓) **one** box.

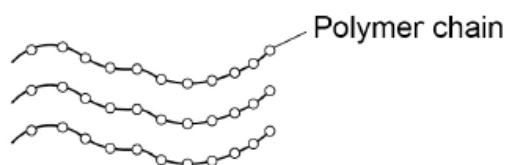
Electronics

Hand warmers

Sports injury packs

Figure 8 represents part of the structure of a polymer.

Figure 8



0 3 . 6 What holds the atoms together in a polymer chain?

[1 mark]

Tick (✓) **one** box.

Covalent bonds

Ionic bonds

Metallic bonds

0 3 . 7 Complete the sentence.

Choose the answer from the box.

[1 mark]

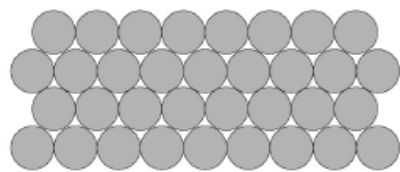
atomic intermolecular macromolecular

In **Figure 8** the polymer chains are held together by
 _____ forces.

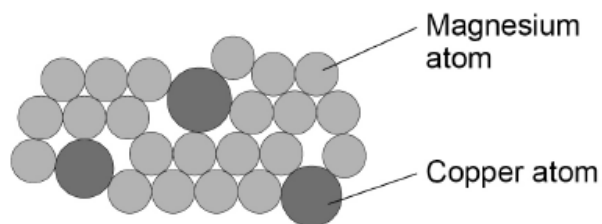
Figure 9 represents part of the structures of:

- magnesium metal
- a magnesium alloy.

Figure 9



Magnesium metal



Magnesium alloy

0 3 . 8

Calculate the percentage of copper atoms in the alloy.

[3 marks]

Number of magnesium atoms in the alloy = _____

Number of copper atoms in the alloy = _____

Total number of atoms in the alloy = _____

Percentage of copper atoms in the alloy = _____ %

0 3 . 9

Explain why the magnesium alloy is harder than magnesium metal.

Use **Figure 9**.

[3 marks]

2. June/2022/Paper_8464/C/1H/No.5

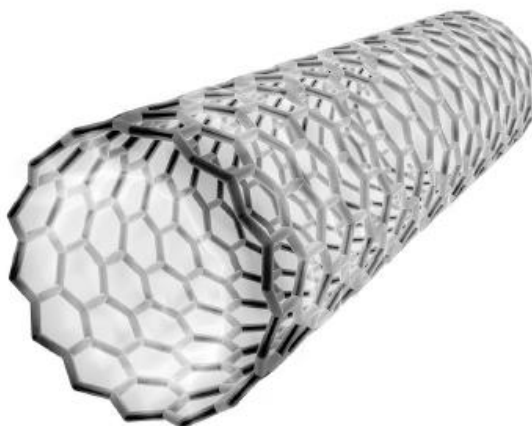
0 5

This question is about structure and bonding.

0 5 . 1

Figure 5 represents part of a carbon molecule.

Figure 5



Name the type of carbon molecule in Figure 5.

[1 mark]

0 5 . 2

Suggest **one** property that makes the carbon molecule in Figure 5 useful in nanotechnology.

[1 mark]

0 5 . 3

An alloy of aluminium contains small amounts of other metals.

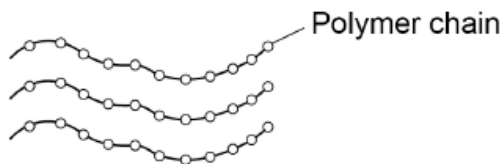
Explain why other metals are added to aluminium.

[4 marks]

0 5 . 4

Figure 6 represents part of the structure of a polymer.

Figure 6



Compare the bonding within the chains with the forces between the chains in this polymer.

[3 marks]
