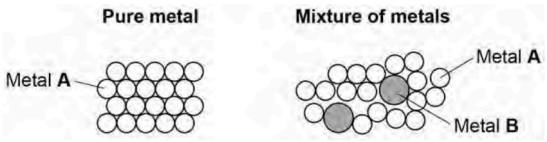
(Metallic bonding)

Q1.a) (2018)

Figure 2 shows the arrangement of atoms in a pure metal and in a mixture of metals.

Figure 2



Calculate the percentage of metal **B** atoms in the mixture of metals shown in **Figure 2**.

[2 marks]

Percentage of metal **B** atoms = _____ %

Q1.b) (2018)

What is a mixture of metals called?

[1 mark]

Tick **one** box.

- An alloy ☐
- A compound ☐
- A molecule ☐
- A polymer ☐

Q1.c) (2018)

Why is the mixture of metals in **Figure 2** harder than the pure metal?

[1 mark]

Tick **one** box.

- The atoms in the mixture are different shapes. ☐
- The layers in the mixture are distorted. ☐
- The layers in the mixture slide more easily. ☐
- The mixture has a giant structure. ☐

Q2.(2020)

This question is about aluminium.

Aluminium is a metal.

Draw **one** line from each property of aluminium to the correct reason for that property.

[2 marks]

Property	Reason
	Aluminium has delocalised electrons
Conducts electricity	Aluminium has layers of atoms which can slide
	Aluminium has strong metallic bonds
High melting point	Aluminium has weak intermolecular forces
	Aluminium has a random arrangement of atoms

Q3.(2020)

Aluminium can be used to make alloys.

What is meant by an 'alloy'?

[1 mark]

_____

_____

Q4.(2020)

Aluminium is extracted from bauxite.

Bauxite is a mixture which contains aluminium oxide.

Bauxite contains between 15% and 25% aluminium.

Aluminium oxide always contains 53% aluminium.

How does this show that bauxite is a mixture and **not** a compound?

[1 mark]

_____

_____

Q5.(2021)

What is the type of bonding in sodium?

[1 mark]

Tick (✓) **one** box.

Covalent ☐

Ionic ☐

Metallic ☐

Q6.(2022)

Aluminium is a metal.

Describe how metals conduct electricity.

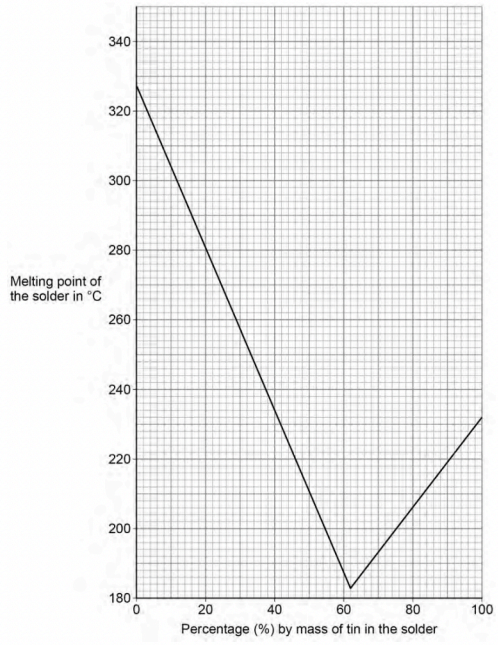
Answer in terms of electrons.

[3 marks]

Q7.a)(2023)

Figure 5 shows how the melting point of the solder changes with the percentage by mass of tin in the solder.

Figure 5



Describe what happens to the melting point of the solder as the percentage by mass of tin increases.

Use data from **Figure 5**.

[3 marks]

Q7.b)(2023)

What is the melting point of pure tin?

Use **Figure 5**.

[1 mark]

Melting point of pure tin = _____ °C