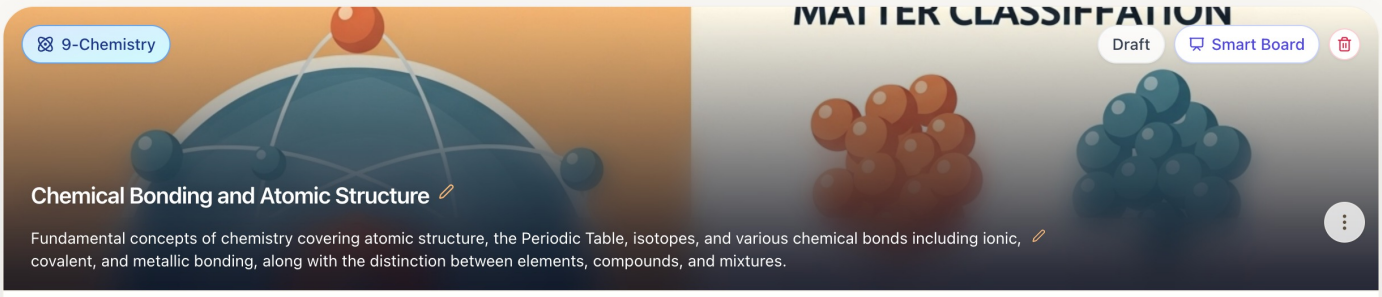


Overview | Questions | Analysis

Assignment | Answer Key | Send to My Pool | + Add Question | Assign | Reinforcement Assignment

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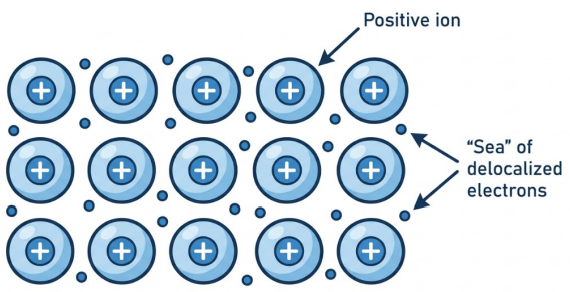


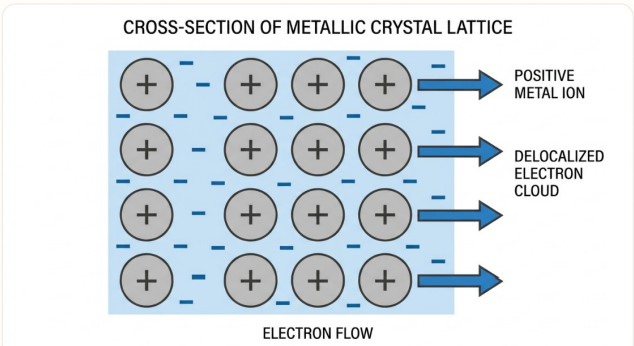

1. Based on the diagram shown, which represents the internal arrangement of atoms in a metallic substance: Metals have a specific type of structure. In this structure, atoms lose their outer shell electrons. These electrons move freely throughout the whole metal sample.

   Which description best explains the bonding found in a metallic lattice?

- A A sea of delocalised electrons and positive ions ✓
- B Shared pairs of electrons between non-metal atoms
- C Different elements mixed together without bonding
- D Negative ions and positive ions in a fixed lattice
- E A nucleus containing only neutrons and protons

Explanation

5 points

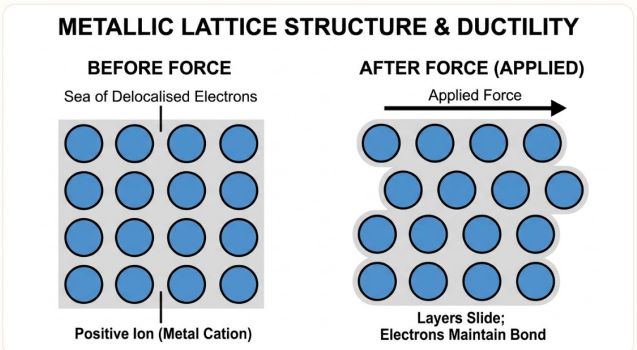



2. Different substances conduct electricity in different ways. Some materials allow electricity to pass through them because they have particles that can move and carry a charge. Referring to the illustration showing the internal structure of a metal, why do metals show good electrical conductivity in the solid state?

- A The regular arrangement of atoms in a lattice
- B The presence of a sea of delocalised electrons ✓
- C The high melting point of the metallic lattice
- D The movement of positive ions toward the negative pole
- E The strong covalent bonds between the atoms

Explanation

5 points

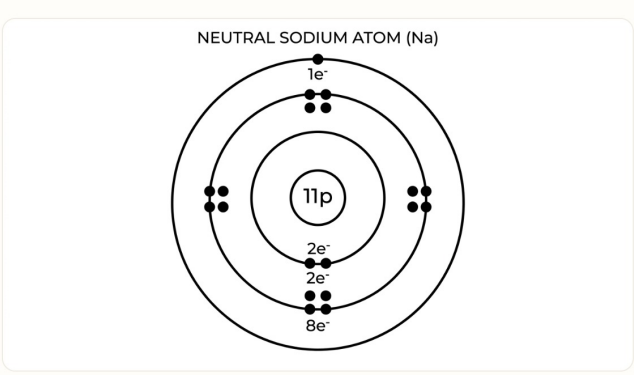



3. Referring to the illustration of metallic lattice behavior under pressure, metals can be hammered into thin sheets or pulled into long wires. This is possible because of the way the particles are arranged and how they react to pressure. What allows a metal to be malleable and change shape without breaking?

- A Positive and negative ions are held in a rigid grid
- B The delocalised electrons are fixed in one place
- C There are weak intermolecular forces between layers
- D The lattice is made of different types of atoms
- E Layers of positive ions can slide over each other ✓

Explanation

5 points

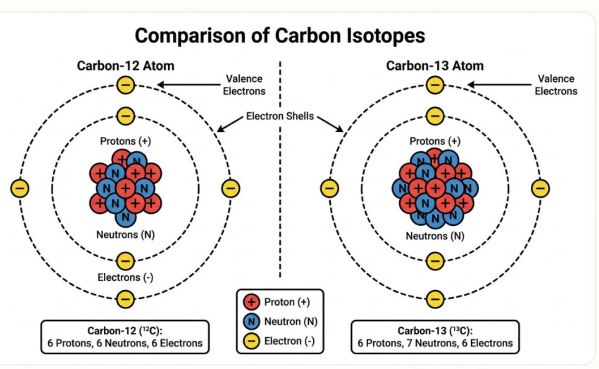



4. The Periodic Table organizes elements based on their atomic structure. The proton number determines the identity of the atom. The number of shells and outer electrons determine an element's position in periods and groups. Based on the provided illustration of a sodium atom, explain the electronic configuration of this atom and identify its position (period and group) on the Periodic Table.

Correct Answer

Assessment Criteria

10 points

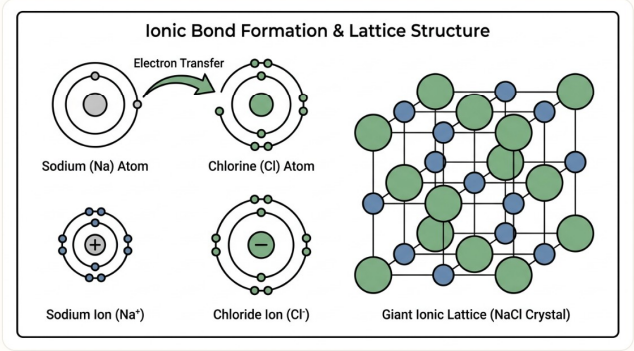



5. As depicted in the figure, atoms of the same element like carbon can have different masses depending on their nuclear composition. Based on the provided illustration and your knowledge of chemistry, define what isotopes are and explain why different isotopes of the same element show the same chemical properties.

Correct Answer

Assessment Criteria

10 points




6. Ionic compounds like sodium chloride form when different types of elements react. As depicted in the figure, these substances have a regular arrangement of ions called a giant lattice, and their bonding affects their physical state and properties. Based on the chemical processes shown in the image, describe how an ionic bond is formed between a metal and a non-metal and explain why ionic compounds usually have high melting points.

Correct Answer

Assessment Criteria

10 points