1. An element is a substance made of:

   ☐ two elements bonded together

   ☐ only compounds

   ☐ a mixture of substances

   ☐ only one type of atom

2. Which subatomic particle has a positive charge?

   ☐ neutron

   ☐ none of them

   ☐ electron

   ☐ proton

3. What is the maximum number of electrons in the first (innermost) shell?

   _____

4. Isotopes are atoms of the same element with different numbers of:

   ☐ electrons

   ☐ protons

   ☐ neutrons

   ☐ shells

5. When a metal atom forms an ion, it:

   ☐ loses electrons to form a positive ion

   ☐ gains electrons to form a negative ion

   ☐ gains protons

   ☐ loses protons

6. Ionic compounds form a:

   ☐ single atom with a full outer shell

   ☐ small molecule held by weak forces

   ☐ sea of delocalised electrons

   ☐ giant lattice of oppositely charged ions

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8. Diamond and graphite are both made of pure carbon.

   ☐ True ☐ False

9. The outer electrons in a metal are delocalised, meaning free to move.

   ☐ True ☐ False

10. In a mixture, the substances are chemically bonded together.

    ☐ True ☐ False

1. **only one type of atom**

   Elements contain a single type of atom.

2. **proton**

   Protons are positive; neutrons neutral; electrons negative.

3. **2**

   The first shell holds up to 2 electrons.

4. **neutrons**

   Isotopes differ only in neutron number.

5. **loses electrons to form a positive ion**

   Metals lose electrons, becoming positive.

6. **giant lattice of oppositely charged ions**

   A giant 3D lattice of ions forms.

7. **share**

   Sharing lets both atoms fill their outer shells.

8. **True**

   Different bonding arrangements give different properties.

9. **True**

   Delocalised electrons explain conduction and malleability.

10. **False**

    False. In a mixture the substances are not chemically bonded and can be separated by physical methods. Elements are chemically bonded only in a compound.

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