

3. Chemical bonding

Starter Quiz · 课前小测

A-Level Chemistry

Name: _____ Score: _____

1. The power of an atom to attract the electrons in a covalent bond is its _____.

2. Ionic bonding is the electrostatic attraction between oppositely charged ions.
☐ True ☐ False
3. Metallic bonding is the attraction between:
☐ positive metal ions and a sea of delocalised electrons
☐ two oppositely charged ions
☐ a shared pair of electrons
☐ two molecules
4. A covalent bond is:
☐ a shared pair of electrons attracted to both nuclei
☐ a transfer of electrons
☐ a sea of delocalised electrons
☐ a force between molecules
5. A pi (π) bond forms by:
☐ the sideways overlap of two p orbitals, above and below the axis
☐ head-on overlap between the atoms
☐ electron transfer
☐ a sea of delocalised electrons
6. VSEPR theory says the shape of a molecule is set by:
☐ electron pairs around the central atom repelling and spreading as far apart as possible
☐ the mass of the atoms
☐ the number of neutrons
☐ the colour of the molecule
7. Compared with the bonds inside substances, intermolecular forces are:
☐ much weaker
☐ much stronger

- ☐ exactly the same
☐ never present

8. Metals conduct electricity because of their _____ (delocalised) electrons.

9. In an ionic solid the ions are packed into a regular giant _____, held by attraction in every direction.

10. Metallic bonding helps explain why metals are strong.
☐ True ☐ False

1. electronegativity

It increases across a period and up a group (fluorine is the highest).

2. True

It forms by transferring electrons from a metal to a non-metal.

3. positive metal ions and a sea of delocalised electrons

In a metal, positive ions sit in a sea of delocalised electrons that hold the structure together.

4. a shared pair of electrons attracted to both nuclei

In a covalent bond two atoms share a pair of electrons, attracted to both nuclei.

5. the sideways overlap of two p orbitals, above and below the axis

A σ bond is head-on overlap; a π bond is the sideways overlap of p orbitals.

6. electron pairs around the central atom repelling and spreading as far apart as possible

Like charges repel, so the electron pairs push apart to minimise repulsion, fixing the shape.

7. much weaker

Intermolecular forces (between molecules) are far weaker than ionic, covalent or metallic bonds within substances.

8. free

A sea of delocalised electrons carries charge.

9. lattice

Each ion is surrounded by oppositely charged neighbours, so the structure is very strong.

10. True

The strong attraction between the positive ions and the electron sea makes metals strong.