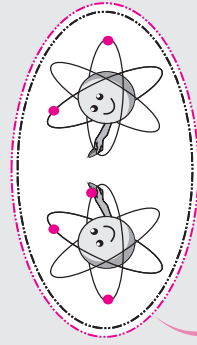


a force that acts between two or more atoms to hold them together and makes them function as a unit.



Electrovalent or Ionic Bond

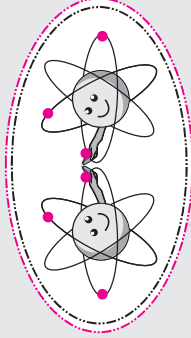
A chemical bond formed by the electrostatic attraction between positive and negative ions. e.g., in NaCl, MgF₂, Na₂S, etc.

Favourable Conditions

- Difference in electronegativities of two atoms must be about 2 or more.
- Lower *I.E.* of an atom to form a cation and higher *I.E.* released when cations and anions are condensed into crystal will favour the formation of ionic bond. The summation of three energies should be negative i.e., energy is released.
 $I.E. + E.A. + L.E. = -ve$

Characteristics

- Compounds having ionic bonding are usually crystalline in nature.
- They have high stability, density, m.p.t and b.pt.
- They conduct electricity only when melted or dissolved in a polar solvent.
- They are soluble in polar solvents like water, etc.



Types of Covalent Bonds

- **Non-polar covalent bond :** Shared electrons are equally attracted by the two atoms as the electronegativity of the atoms is same. e.g., H₂, Cl₂, etc.
- **Polar covalent bond :** Shared pair of electrons move towards the atom having greater electronegativity. e.g., NH₃, CHCl₃, etc.

Characteristics

- Compounds with covalent bonds generally have low m.p.t. and b.pt. due to weak forces of attraction between molecules.
- In general, these compounds are bad conductor of electricity.
- These compounds are soluble in non-polar solvents and insoluble in polar solvents.

Favourable Conditions

- Difference in electronegativities of two atoms must be zero or very small (approx. less than 1.6)
- Atoms having 5, 6 or 7 valence electrons share electrons to complete its noble gas configuration.

Covalent Bond

A chemical bond formed by sharing one or more electron pairs between atoms provided each atom contributes equally e.g., in CH₄, HCl, H₂O, etc.

Coordinate Bond

A covalent bond in which both electrons of the shared pair are contributed by one of the two atoms. e.g., in NH₄⁺ ion, CO molecule, etc.

Characteristics

- Compounds with coordinate bond have m.p.t. and b.pt. higher than pure covalent compounds and lower than pure ionic compounds.
- These compounds like covalent compounds are bad conductor of electricity.
- These compounds are sparingly soluble in polar solvents but readily soluble in non-polar solvents.

