

Types of Bonding (Ionic/Electrovalent)



Content

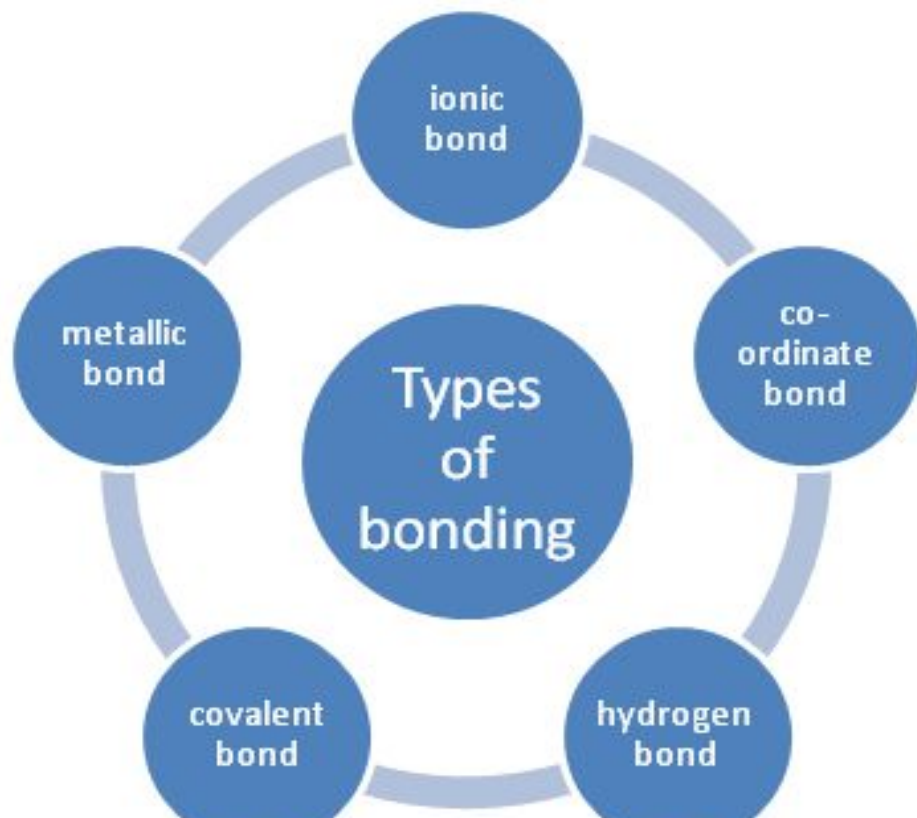
- Chemical bonds and its types
- Definitions of Electrovalent /ionic bond
- Bonding of NaCl
- Bonding of MgO
- Bonding of CaCl₂
- Properties of ionic compounds
- Questions

Chemical bonds: The force of attraction between two atoms together in a molecule.

Eg : **Na-----Cl**

Mg-----O

Cl-----Ca-----Cl



Ionic or Electrovalent Bond

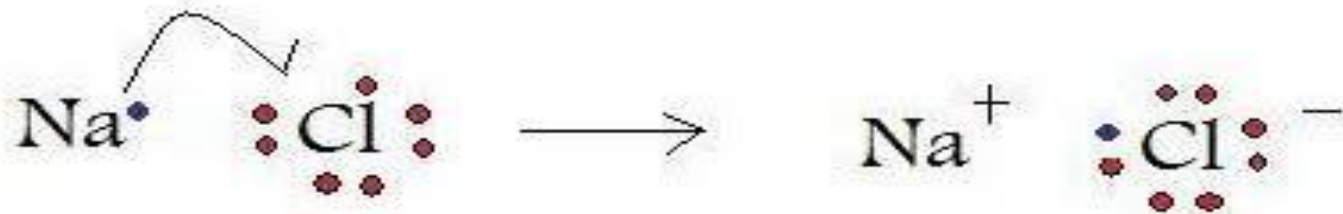
Ionic or Electrovalent Bond

- ❑ Formed by the **transfer** of one or more electrons
- ❑ The atom which **loses electrons** is called **Cation** (Positively charged Ion),usually metals
- ❑ The atom which **gains electrons** is called **Anion**(Negatively charged Ion),usually non metals.
- ❑ (Ions are charged Particle)
- ❑ For example, NaCl,KCl,MgO,AlCl₃
- ❑ (When outermost electron/electrons are lost the remaining part is called **core or kernel**.)
- ❑ -Nature of ionic bond is Electrostatic force of attraction and it is non directional bond

Bonding in NaCl (Sodium chloride)

- NaCl contains one atom of Na (sodium) and one atom of chlorine (Cl)
- Z OF Na is 11 and Z of CL is 17
- EC of Na is (2,8,1) and that of Cl is (2,8,7)
- Both are unstable so Sodium loses one electron and becomes sodium ion Na^+
- Chlorine atom which is short of one electron gains that one electron from sodium atom and become chloride ion Cl^-
- Both sodium ion and chloride ion are oppositely charged ,so they attract each other due to strong force of attraction and develop a bond called as electrovalent bond(transfer of electron) or ionic bond (ions are formed)

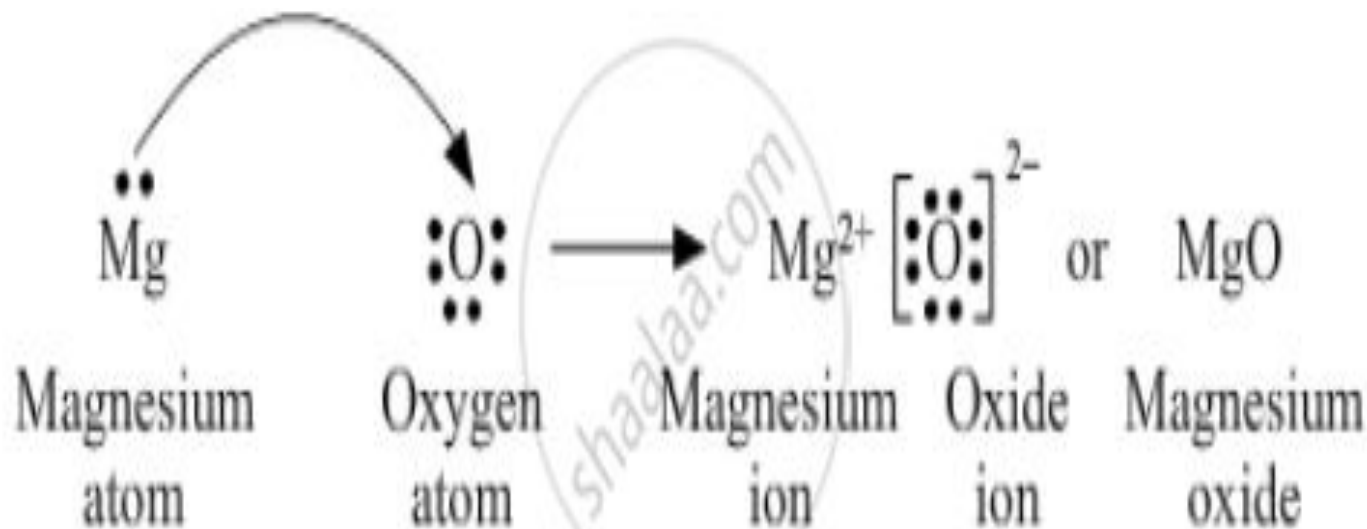
Bonding in NaCl



Bonding in Magnesium oxide (MgO)

- MgO contains one atom of Mg (Magnesium) and one atom of Oxygen
- Z OF Mg is 12 and Z of O is 8
- EC of Mg is (2,8,2) and that of O is (2,6)
- Both are unstable so Mg loses one electron and becomes magnesium ion Mg^{+2}
- Oxygen atom which is short of 2 electron gains that 2 electron from Mg atom and become oxide ion O^{-2}
- Both Mg ion and O ion are oppositely charged ,so they attract each other due to strong force of attraction and develop a bond called as electrovalent bond(transfer of electron) or ionic bond (ions are formed)

Bonding in Magnesium oxide (MgO)

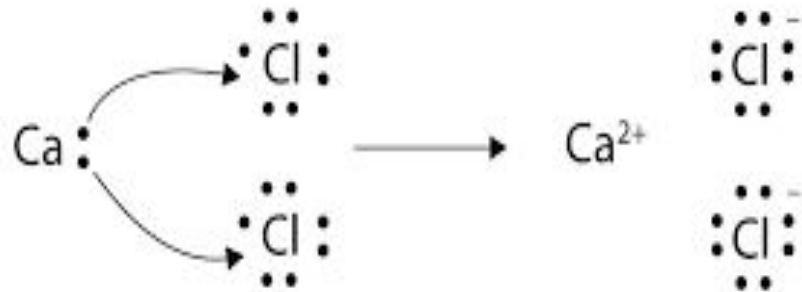


Bonding in CaCl_2

Ca 20 (2,8,8,2) so calcium loses one electron to each chlorine atom

Cl 17 (2,8,7)

Cl 17 (2,8,7)



Properties of ionic compounds based on its bonding

- (i) These compounds are highly soluble in water.
- (ii) They have high melting and boiling points.
- (iii) They are good conductors of electricity in their aqueous state (due to the presence of ions).
- (iv) They are mostly solid .
- (v) They are formed by complete transfer of electrons
- (vi) they are generally crystalline solids.

Questions

1. Ionic bond is formed due to _____ of electrons
2. Ionic bond also called as _____
3. Ionic compounds are good conductors of electricity due to presence of _____
4. Ionic have high MP and BP due to _____
5. In an ionic bond bonding atoms combine together so as