

UNIT 4**CHEMICAL BONDING AND
MOLECULAR STRUCTURE**

Valence Bond Theory (VBT):

- According to VBT, bonding atoms experience attractive as well as repulsive forces.
- Attractive forces between nucleus and electrons.
- Repulsive forces between two nuclei and between electrons.
- A stage where net force of attraction balances net force of repulsion, molecule is said to be bonded.
- When two atoms comes closer, atomic orbitals overlap.
- The different possible types of overlapping are,
 $s - s$, $s - p$ and $p - p$ overlapping
- All above types of overlapping are direct overlaps and also known as axial overlap and the resultant bond formed is called Sigma (σ) bond.
- Atomic orbitals can also overlap through sidewise overlapping. This is called Lateral overlapping. The resultant bond formed is called P (π) bond.
- Extent of overlapping is more in case of sigma bond. Hence it is stronger than Pi bond.

Hybridisation:

The process of intermixing of atomic orbitals to form equal no of hybrid orbitals with equal energies and shape.

- Hybrid orbitals are more effective in forming stable bonds compared to atomic orbitals.
- These hybrid orbitals have preferred direction in space to have stable arrangement.
- The type of hybridisation indicates geometry of molecule.

