

# Important Questions Chemical Bonding



Here are some important questions from the topic of *Chemical Bonding* in class 11 Chemistry (NCERT-based):

- 1. Define the following terms:**
  - Bond order
  - Hybridization
  - Sigma ( $\sigma$ ) bond
  - Pi ( $\pi$ ) bond
- 2. Explain why the bond angles in  $CH_4$ ,  $NH_3$ , and  $H_2O$  are different despite the central atom undergoing  $sp^3$  hybridization in each.**
- 3. Explain  $sp^2$  hybridization in  $BF_3$ .**
- 4. Draw the molecular orbital (MO) diagram for an oxygen molecule. Calculate its bond order and explain why oxygen is paramagnetic.**
- 5. Draw the Lewis structures for the following species:**
  - $NO_3^-$
  - $SO_4^{2-}$
  - $HNO_3$
  - $O_3$
- 6. What is dipole moment, and why does the linear carbon dioxide molecule, which has two polar bonds, have zero dipole moment?**
- 7. Explain the bond formation in ethylene ( $C_2H_4$ ) and acetylene ( $C_2H_2$ ) using hybridization.**
- 8. Using VSEPR theory, predict the shapes of the following molecules:**
  - $IF_7$
  - $SF_6$
- 9. Why is hydrogen gas diatomic, whereas inert gases are monoatomic? Explain using Molecular Orbital Theory (MOT).**
- 10. Which bond is stronger, sigma ( $\sigma$ ) or pi ( $\pi$ ) bond? Explain why.**

These questions cover key concepts like hybridization, molecular orbital theory, bond parameters, and Lewis structures, which are critical to mastering the topic of chemical bonding.

For a deeper dive into the theory behind these questions, you can refer to the detailed explanations in your study materials .