

### ❖ Problems

- Q 1. Write down the basic postulates of the valence-shell-electron-pair-repulsion (VSEPR) theory.
- Q 2. How would you use the VSEPR theory to explain the molecular geometry of seven electron-pair-domains?
- Q 3. Draw and discuss the structure of  $\text{ClF}_3$  molecule on the basis of the VSEPR model.
- Q 4. The axial bond lengths than the equatorial one in trigonal bipyramidal geometries, while shorter in pentagonal bipyramidal structure. Why?
- Q 5. Write down the five main limitations of the VSEPR theory.
- Q 6. How would you explain the nature of the orbitals used by main-group elements for  $d\pi-p\pi$  bonding in tetrahedral molecules?
- Q 7. What are the characteristic features of orbital hybridization?
- Q 8. Draw and explain the orbital hybridization in hypervalent molecules using suitable examples.
- Q 9. Discuss the orbital hybridization of  $\text{NH}_3$  and  $\text{H}_2\text{O}$  molecules in a comparative framework.
- Q 10. Discuss the stereochemistry of the following: (i)  $\text{SnCl}_2$  (ii)  $\text{ClF}_3$ .
- Q 11. Define the Bent's rule and explain Why the bond angle of  $\text{PH}_3$  is less than that of  $\text{PF}_3$ ?

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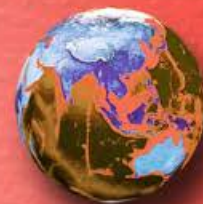
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# A TEXTBOOK OF INORGANIC CHEMISTRY

**Volume I**

**MANDEEP DALAL**



*First Edition*

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9 788193 872000

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