



## CHEMISTRY

CH: 4 CHEMICAL BONDING

Class: XI

### Answer the following

- Define the following
  - Bond length
  - bond enthalpy
  - bond angle
  - bond order
  - lattice enthalpy
  - Vander wall's radius
- What do you mean by formal charge of an atom in a polyatomic ion?
- Dipole moment of HF is higher than that of HCl. Why?  
Give reasons for the following
  - NF<sub>3</sub> is pyramidal while BF<sub>3</sub> is triangular planar.
  - Bond angle in water is larger than that in H<sub>2</sub>S.
  - BeH<sub>2</sub> molecule has a zero dipole moment although the Be H bonds are polar.
- Discuss the shape of the following molecules using VSEPR theory. a) SO<sub>2</sub> b) PH<sub>3</sub>
- What is resonance? Explain with examples.
- Which bond is stronger  $\sigma$  or  $\pi$  and why?
- What types of hybridization are involved with the central atom of molecules having following shapes?
  - Planar
  - regular tetrahedral
  - square pyramidal
  - octahedral
  - trigonal pyramidal
- Describe LCAO method for the formation of molecular orbitals.
- Molecular nitrogen is not reactive. Explain on the basis of MO theory.
- Write the molecular orbital electronic configurations of the following species.
  - N<sub>2</sub>
  - F<sub>2</sub><sup>+</sup>
  - B<sub>2</sub>.Predict their magnetic nature and stability.
- Distinguish between inter molecular and intra molecular hydrogen bonding with examples.



## INDIAN SCHOOL NIZWA - WORKSHEET

12. Study the table given below and state reasons for the variations in bond angles of hydrides of group 16 and trihalides of phosphorous.

Compound	H <sub>2</sub> O	H <sub>2</sub> S	H <sub>2</sub> Se	H <sub>2</sub> Te
Bond angle	104.5°	92.5°	91°	90.5°
Compound	PF <sub>3</sub>	PCl <sub>3</sub>	PBr <sub>3</sub>	PI <sub>3</sub>
Bond angle	92°	100°	101.5°	102°

13. Give the type of hybridization and shape of the following a) NH<sub>4</sub><sup>+</sup> b) NO<sub>3</sub><sup>-</sup>

14. Which is more polar: CO<sub>2</sub> or N<sub>2</sub>O? Give reason.

15. Why NF<sub>3</sub> is pyramidal but BF<sub>3</sub> is trigonal planar?

16. Why H<sub>2</sub>O is liquid while H<sub>2</sub>S is gas at room temperature?

17. Why boiling point of HF is greater than HCl?

From each of the following pairs select the molecule with higher value of property mentioned.

i) NH<sub>3</sub>, BF<sub>3</sub> Dipole moment    ii) NF<sub>3</sub>, NH<sub>3</sub> Dipole moment    iii) H<sub>2</sub>O, NH<sub>3</sub> Bond angle

iv) HCl, HBr ionic character

18. Why PCl<sub>5</sub> exists but NCl<sub>5</sub> does not?

19. Differentiate between atomic orbital and molecular orbital.

20. In SF<sub>4</sub>, the lone pair of electrons occupies at the equatorial position than axial position. Why?

21. The dipole moment of hydrogen halides decreases from HF to HI. Explain this trend

22. Why is LiI more covalent than LiF?

23. Compare the relative stabilities and magnetic properties of N<sub>2</sub><sup>+</sup>, N<sub>2</sub><sup>-</sup>, N<sub>2</sub>, N<sub>2</sub><sup>2-</sup> ions