## **CHEMISTRY**



Board - CBSE

Class - 11<sup>th</sup>

## Topic - Chemical Bonding and Molecular Structure

- 1. Write the significance/applications of dipole moment.
- 2. How is bond length related to the stability of the molecule?
- 3. Draw the resonating structures of ozone molecule and nitrate ion.
- 4. Give one example each of intermolecular and intra molecular hydrogen bonding.
- 5. In what respect is hydrogen bonding different from ionic& covalent bonding?
- 6. Explain with the help of suitable example polar covalent bond.
- 7. Draw the resonance structures of:

 $CO_2$ 

b) NO<sub>2</sub>

c)  $N_2O_5$ 

- 8. Bond angle in NH<sub>3</sub> is more than in PH<sub>3</sub>. Explain.
- 9. Why is ethyl alcohol completely soluble in water?
- 10. "A non-polar molecule can have highly polar bonds." Justify the statement.
- 11. Explain why CCl<sub>4</sub> has a zero dipole moment although C Cl bonds are polar.
- 12. Explain why oxygen is paramagnetic but the peroxide ion is diamagnetic.
- 13. Arrange the following molecules in the increasing order of bond angles around the central atom
  - a) H<sub>2</sub>O, NH<sub>3</sub>, BF<sub>3</sub>, BeF<sub>2</sub>
  - b) SF<sub>6</sub>, CCl<sub>4</sub>, H<sub>2</sub>O, NH<sub>3</sub>
  - c) AlCl<sub>3</sub>, H<sub>2</sub>S, BeH<sub>2</sub>, H<sub>2</sub>O
  - d) CH<sub>4</sub>, NH<sub>3</sub>, H<sub>2</sub>O, BF<sub>3</sub>
- 14. Ethane is stable while ethene is quite reactive. Why?
- 15. Write the configuration of following species and find if they are paramagnetic or diamagnetic.
  - a) B<sub>2</sub>
  - b) N<sub>2</sub>
- 16. Use molecular orbital theory to explain why Be<sub>2</sub> molecule does not exist.
- 17. Although both CO<sub>2</sub> and H<sub>2</sub>O are triatomic molecules, the shape of H<sub>2</sub>O molecule is bent while that of CO<sub>2</sub> is linear. Explain this on the basis of dipole moment.
- 18. The dipole moment of hydrogen halides decreases from HF to HI. Explain this trend.
- 19. Give reasons for the following:
  - (a) H₂O is a liquid but H₂S is a gas at room temperature.
  - (b) NH₃ has a higher boiling point than PH₃.
- 20. Why is lithium iodide more covalent than lithium fluoride

## **CHEMISTRY**

