



PAST PAPER QUESTIONS

CHEMICAL BONDING

SHORT QUESTIONS

1. What is "Octet rule"? Give two examples of the compounds which do not obey Octet rule.
2. Why the dipole moment of SO_2 is 1.61 D but that of SO_3 is zero?
3. Why the abnormality of bond strength in HI is less prominent than that of HCl.
4. Write the names of factors affecting the strength of a bond?
5. Define "Dipole moment Give its various units.
6. Why is the second ionization energy greater than first one?
7. Define bond energy and give one example?
8. Why molecular orbital theory is superior to valence bond theory?
9. Define dipole moment? What is expression to calculate the dipole moment of a molecule?
10. Write two main postulates of VSEPR theory?
11. Why cationic radius is smaller than parent atom?
12. How does ionization energy vary in a group of periodic table?
13. Why CO is polar and CO_2 is non-polar?
14. The size chlorine atom is smaller than Cl^{-1} ion. Justify it.
15. Define electron affinity. And give an example.
16. π - bonds are more diffused than δ -bonds. Give reason.
17. What is bond order? Give an example.
18. Define electronegativity. Give its trend in the periodic table.
19. Define coordinate covalent bond and give one example.
20. Represent the molecular orbitals of N_2 molecule in the increasing order of energy.
21. Why the energy of anti-bonding molecular orbital is higher than corresponding bonding molecular orbitals?
22. How the nature of a chemical bond is predicted with the help of electronegativity values of two bonded atoms?

23. No bond in chemistry is 100% ionic. Justify it.
24. Differentiate between atomic orbital and molecular orbital.
25. How the type of bonding affects 'solubility of compounds'?
26. State the geometry of NH_3 molecule on the basis of VSEPR theory.
27. Sketch the molecular orbital picture of O_2 .
28. Explain that Helium is diamagnetic.
29. Sigma bond is stronger than pi-bond. Explain.
30. Bond distance is the compromise distance between two atoms.
31. The dipole moment of CO_2 is zero but dipole moment of H_2O is 1.85D. Explain.
32. Ionic compounds do not show the phenomena of isomerism. Why?

LONG QUESTIONS

1. Explain the molecular orbital structures of following molecules on the basis of the MOT:
(i) N_2 (Nitrogen) (ii) O_2 (oxygen)
2. Write the main points of valence shell electron pair repulsion theory and explain the structure of ammonia on the basis of this theory.
3. Explain structure of CH_4 on the basis of hybridization theory.
4. Define electron affinity. Name the factors affecting it. How does it vary in the periodic table?
5. Write main postulates of molecular orbital theory
6. What is hybridization? Explain sp^2 hybridization with example.
7. Draw the shapes of following molecules according to VSEPR theory.
i) BeCl_2 ii) BF_3 iii) H_2O iv) NH_3
8. Explain ionization energy by giving one example? Also discuss its periodic trends.
9. Define hybridization. Explain the geometry of ethene on the basis of sp^2 hybridization.