

Topic: Chemical Bonding

1. Write the electron dot structures of the following compounds : MgO , MgBr_2 , KBr , Na_2S and Al_2O_3
2. Write Lewis structures of the following species : Cl^- , O^{2-} , N_3^- , S^{2-} .
3. What type of elements do form ionic bonds and why ?
4. Explain the formation of following molecules : PCl_3 , CH_4 , H_2O , PH_3 , OF_2 , C_2H_6
5. Phosphorus exhibits a covalency of 3 in PCl_3 while of 5 in PCl_5 . How would account for this observation.
6. Identify the atoms in each of the following compounds which do not obey the octet rule :
(i) NH_3 (ii) BeF_2 (iii) BCl_3 (iv) SF_6 (v) PCl_5
7. Explain the structures of PCl_5 and SF_6 within the frame work of octet rule.
8. What inferences would you derive from the following observations ?
(i) Dipole moment of BF_3 is zero. (ii) Dipole moment of H_2O is 1.85 D.
9. State and explain Fajan's rules.
10. Which property of water is helpful in the dissolution of an ionic solid in it ?
11. What is the maximum covalency of sulphur ?
12. Why is ionic bond regarded as an extreme case of a polar covalent bond ?
13. What do you understand by variable electrovalency? Give some examples.
14. Discuss the factors which govern the formation of a covalent bond.
15. Define dipole moment. How is it related to the molecular structure ?
16. Explain why : (i) Dipole moment of H_2O is much higher than that of H_2S
(ii) The Dipole moment of CO_2 is zero although it contains electronegative oxygen atoms.
(iii) Both BF_3 and NH_3 are the molecules of the type AB_3 but their dipole moments are not equal.
17. Compare the important properties of ionic and covalent compounds.
18. Explain with examples the cause of partial ionic character in covalent bonds.
19. Why aq. Solution of HCl is conductor of electricity while it is covalent in nature?
20. Define the following terms : (i) Bond energy (ii) bond length