BCM School Basant Avenue Dugri road Ludhiana

Chemistry Assignment for class XI
Chapter,- Chemical Bonding

Q-1 The molecule of CO2 is linear whereas that of SnCl2 is angular why?

Q-2 Draw molecular orbital diagram for N2

+ molecule.

Q-3 N (SiH3)3 and N(CH3)3 are not isostructural. Give reason.

Q-4 N2 is diamagnetic while O2 is paramagnetic. Explain on the basis of Molecular orbital theory.

Q-5 Arrange the following in the order of property indicated for each set:

(i) O_2, O_2^+, O_2^-, O_2^{2-}

(increasing stability)

(ii) LiCl, NaCl, KCl, RbCl (decreasing covalent character)

(iii) NO_2, NO_2+, NO_2 –

(decreasing bond angle)

(iv) H–F, H–Cl, H–Br, H–I (decreasing bond dissociation enthalpy)

Q-6. Using the molecular orbital theory, compare the bond energy and magnetic character of O2+ and O2– species.

Q-7 Discuss the shape of the following molecules using the VSEPR model:

(a) $SiCl_4$ (b) AsF_5

Q-8 Why dipole moment of BF_3 is zero but for PCl_3 it is non zero?

Q-9 Arrange the bonds in order of increasing ionic character in the molecules: LiF, K_2O, N_2, SO_2, and ClF_3

Q-10 Write the important conditions that are required for the linear combination of the atomic orbitals to

form the molecular orbitals.

Q-11 Discuss the shape of the following molecule using the VSEPR model:

BeCl2, BCl3, SiCl4, AsF5, H2S, PH3

Q-12 Structures of molecules of the two compounds have given below:

(a) Which of the following two compounds will have intermolecular hydrogen bonding, and

which compound is expected to show the intramolecular hydrogen bonding?

(b) The compound's melting point depends on, among other things, the extent of the hydrogen

bonding. On the basis, explain which of the above two compounds would show the higher

melting point.

(c) Solubility of the compounds in water depends on the power to form hydrogen bonds with

water, which of the above compounds will easily form a hydrogen bond with water and be

more soluble in it.

Q-13 Is there any change in the B and N atoms hybridisation due to the following reaction?

$BF_3 + NH_3 \rightarrow F_3B.NH_3$

Q-14 Use molecular orbital theory to explain why the Be2 molecule does not exist.

Q-15 Apart from tetrahedral geometry, another possible geometry for CH_4 is square planar with

the four H atoms at the corners of the square and the C atom at its centre. Explain why

CH4 is not square planar?

Q-16 Draw the shape of following molecules according to VSEPR theory; XeO3, XeF2, XeOF4, SF4, XeF4

Q-17 Describe the hybridisation in case of PCl5. Why are the axial bonds longer as compared to equatorial

bonds?

Q-18 What is meant by the term bond order? Calculate the bond order of N2, O2, O2+, O2-