Chemical Bonding

Assignment-1

Q1. What will be the hybridization of the following molecules?

I) SO_3 II) PH_4^+ III) AsH_3 IV) XeO_2F_4

V) H_2S VI) $[XeF_5]^-$ VII) $SbPh_5$ VIII) MnO_4^-

IX) $[TeF_5]^-$ X) SNF_3

Q2. What will be the hybridization of P-Br bond in PBr_3, if angle between the bonds is 111°.

Q3. The s-character in lone pair of N in NH_3 is 34%. What will be the angle between the bonds?

Q4. Arrange the following compounds in the decreasing order of their thermal stability?

B_2F_4	B_2Cl_4	B_2Br_4	B_2I_4
I)	II)	III)	IV)

a) I > II > III > IV

b) IV > III > II > I

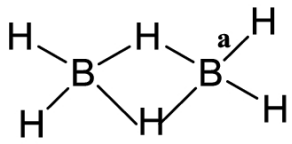
c) II > III > IV > I

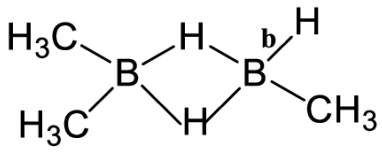
d) I > IV > II > III

Q5. Ionization energy of which of the following radicals will be higher?

$\dot{C}F_3$, $\dot{C}H_3$

Q6. Which one of the bonds, **a** and **b**, will have higher stretching frequency?





Q7. Structures of $SbPh_5$ and PPh_5 respectively are **[NET June 2014]**

a) trigonal bipyramidal, square pyramidal

b) square pyramidal, trigonal bipyramidal

c) trigonal bipyramidal, trigonal bipyramidal

d) square pyramidal, square pyramidal

Q8. The δ bond is formed via the overlap of **[NET Dec 2014]**

a) $d_{x^2-y^2}$ and $d_{x^2-y^2}$ orbitals

b) d_{xz} and d_{xz} orbitals

c) d_{xy} and d_{xy} orbitals

d) d_{yz} and d_{yz} orbitals

Q9. A molecular orbital of a diatomic molecule changes sign when it is rotated by 180° around the molecular axis. This orbital is
[NET June 2015]

a) σ b) π c) δ d) ϕ

Q10. The structures of XeF_2 and XeO_2F_2 respectively are **[NET Dec 2015]**

a) bent, tetrahedral

b) linear, square planar

c) linear, see saw

d) bent, see saw

Q11. The molecule C_3O_2 has a linear structure. This compound has
[NET Dec 2015]

a) 4σ and 4π bonds

b) 3σ and 2π bonds

c) 2σ and 3π bonds

d) 3σ and 4π bonds

Q12. Choose the correct option for carbonyl fluoride with respect to bond angle and bond length **[NET June 2016]**

a) ∠F-C-F > ∠F-C-O and C-F > C-O

b) ∠F-C-F > ∠F-C-O and C-F < C-O

c) ∠F-C-F < ∠F-C-O and C-F > C-O

d) ∠F-C-F < ∠F-C-O and C-F < C-O

Q13. The geometry of $[ReH_9]^{2-}$ is **[NET Dec 2016]**

a) monocapped square antiprism

b) monocapped cube

c) tricapped trigonal prism

d) heptagonal bipyramid

Q14. The structure of SF_4 is **[GATE 2004]**

a) octahedral

b) tetrahedral

c) trigonal bipyramidal

d) square planar