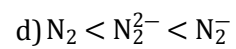
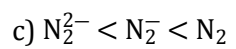
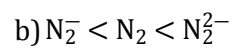
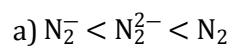


## Topic :- Chemical Bonding and Molecular Structure

- Which is electron deficient compound?  
a)  $C_2H_4$                       b)  $B_2H_6$                       c)  $C_2H_6$                       d)  $NaBH_4$
- $CCl_4$  is insoluble in water because:  
a)  $CCl_4$  is non-polar and water is polar  
b) Water is non-polar and  $CCl_4$  is polar  
c) Water and  $CCl_4$  both are polar  
d) None of the above
- Which of the following is not correct regarding the properties of ionic compounds?  
a) Ionic compounds have high melting and boiling points  
b) Their reaction velocity in aqueous medium is very high  
c) Ionic compounds in their molten and aqueous solutions do not conduct electricity  
d) They are highly soluble in polar solvents
- The number of sigma and pi ( $\pi$ ) bonds present in benzene respectively are  
a) 12, 6                      b) 6, 6                      c) 6, 12                      d) 12, 3
- Which of the following is not tetrahedral?  
a)  $BF_4^-$                       b)  $NH_4^+$                       c)  $CO_3^{2-}$                       d)  $SO_4^{2-}$
- In  $PCl_5$  molecule, P is:  
a)  $sp^3$ -hybridized                      b)  $dsp^2$ -hybridized                      c)  $ds^3p$ -hybridized                      d)  $sp^3d$ -hybridized
- The bond angle and % of  $d$ -character in  $SF_6$  are  
a)  $120^\circ$ , 20%                      b)  $90^\circ$ , 33%                      c)  $109^\circ$ , 25%                      d)  $90^\circ$ , 25%
- Linear combination of two hybridized orbitals, belonging to two atoms and each having one electron leads to:  
a) Sigma-bond  
b) Double bond  
c) Coordinate covalent bond

- d) Pi-bond
9. In allene structure, three carbon atoms are joined by:
- Three  $\sigma$ -and three  $\pi$ -bonds
  - Two  $\sigma$ - and one  $\pi$ -bond
  - Two  $\sigma$ -and two  $\pi$ -bonds
  - Three  $\pi$ -bonds only
10. Geometry of  $\text{SiO}_4^{4-}$  anion is
- Tetrahedral
  - Trigonal
  - Trihedral
  - Pentagonal
11. The carbon atom in graphite is:
- $sp^2$ -hybridized
  - $sp^3$ -hybridized
  - $sp$ -hybridized
  - None of these
12. Boron cannot form which one of the following anions?
- $\text{BF}_6^{3-}$
  - $\text{BH}_4^-$
  - $\text{B(OH)}_4^-$
  - $\text{BO}_2^-$
13. If the ionic radii of  $\text{K}^+$  and  $\text{F}^-$  are about 1.34 Å each, then the expected values of atomic radii of K and F should be respectively:
- 1.34 and 1.34 Å
  - 2.31 and 0.64 Å
  - 0.64 and 2.31 Å
  - 2.31 and 1.34 Å
14. If Z-axis is the molecular axis, then  $\pi$ -molecular orbitals are formed by the overlap of
- $s + p_z$
  - $p_x + p_y$
  - $p_z + p_z$
  - $p_x + p_x$
15. Which one is the weakest bond?
- Hydrogen
  - Ionic
  - Covalent
  - Metallic
16. The total number of valency electrons for  $\text{PO}_4^{3-}$  ion is:
- 32
  - 16
  - 28
  - 30
17. The ratio of  $\sigma$  and  $\pi$ -bonds in benzene is:
- 2
  - 6
  - 4
  - 8
18. The geometry of  $\text{PF}_5$  molecule is:
- Planar
  - Square planar
  - Trigonal bipyramidal
  - Tetrahedral
19. Which one of the following linear structure?
- $\text{I}_3^-$
  - $\text{NO}_2^-$
  - $\text{I}_3^+$
  - $\text{SO}_2$
  - $\text{N}_3^-$
- I, II and III
  - I and V
  - II, III and IV
  - All of these
20. According to MO theory, which of the following lists ranks the nitrogen species in terms of increasing bond order?



PE