Hybridisation

1. The structure of PF_5molecule is
   (a) Tetrahedral
   (b) Trigonal bipyramidal
   (c) Square planar
   (d) Pentagonal bipyramidal

2. Which of the following hybridisation has maximum s-characters
   (a) sp^3
   (b) sp^2
   (c) sp
   (d) None of these

3. The PCl_5 molecule is a result of the hybridisation of
   (a) sp^2d^2 (b) sp^3d
   (c) spd^3 (d) sp^2d^3

4. Hybridisation involves
   (a) Addition of an electron pair
   (b) Mixing up of atomic orbitals
   (c) Removal of an electron pair
   (d) Separation of orbitals

5. The geometry of sulphur trioxide molecule is
   (a) Tetrahedral
   (b) Trigonal planar
   (c) Pyramidal
   (d) Square planar

6. The shapes of BCl_3, PCl_3 and ICl_3molecules are all
   (a) Triangular
   (b) Pyramidal
   (c) T –shaped
   (d) All above are incorrect

7. In benzene molecule all $C-C$ bond lengths are equal because
   (a) All carbon atoms are equivalent
   (b) All carbon atoms are sp^2 hybridised
   (c) All $C-C$ bonds in benzene, have same order
   (d) All $C-C$ bonds are single covalent bond

8. Which one is false in the following statements
   (a) Each carbon in ethylene is in sp^2 hybridisation
   (b) Each carbon in acetylene is in sp^3 hybridisation
   (c) Each carbon in benzene is in sp^2 hybridisation
   (d) Each carbon in ethane is in sp^3 hybridisation

9. Out of the following hybrid orbitals, the one which forms the bond at angle120^o, is

(a) d^2sp^3 (b) sp^3

(c) sp^2 (d) sp

10. As the p – character increases, the bond angle in hybrid orbitals formed by s and atomic orbitals

(a) Decreases

(b) Increases

(c) Doubles

(d) Remains unchanged

11. sp^3 hybridization leads to which shape of the molecule

(a) Tetrahedron

(b) Octahedron

(c) Linear

(d) Plane triangle

12. Which of the following will be octahedral

(a) SF_6 (b) BF_4^-

(c) PCl_5 (d) BO_3^{3-}

13. The hybrid orbitals used by central atoms in $BeCl_2, BCl_3$ and CCl_4 molecules are respectively

(a) sp^2, sp^3 and sp

(b) sp , sp^2 and sp^3

(c) sp^2, sp^3 and sp^2

(d) sp^2, sp and sp^3

14. The structure of H_2O_2 is

(a) Planar (b) Non-planar

(c) Spherical (d) Linear

15. Which of the following is isoelectronic as well as has same structure as that of N_2O

(a) N_3H (b) H_2O

(c) NO_2 (d) CO_2

16. CCl_4 has the hybridisation

(a) sp^3d (b) dsp^2

(c) sp (d) sp^3

17. Compound having planar symmetry is

(a) H_2SO_4 (b) H_2O

(c) HNO_3 (d) CCl_4

18. Which of the following compounds is not linear

(a) $SnCl_2$ (b) HCl

(c) CO_2 (d) $HgCl_2$

19. Which one of the following statements is true for ammonium ion

(a) All bonds are ionic

(b) All bonds are coordinate covalent

(c) Hatoms are situated at the corners of a square

(d) Hatoms are situated at the corners of a tetrahedron

20. The bond angle in sp^2 hybridisation is

(a) 180^o (b) 120^o

(c) 90^o (d) $109^o 2'$