Hybridisation

1. Which molecule is not linear
   (a) BeF_2 (b) BeH_2
   (c) CO_2 (d) H_2O

2. The bond angle in water molecule is nearly **or** Directed bonds in water forms an angle of
   (a) 120^o (b) 180^o
   (c) $109^o28'$ (d) $104^o30'$

3. The central atom in a molecule is in sp^2 hybrid state. The shape of molecule will be
   (a) Pyramidal
   (b) Tetrahedral
   (c) Octahedral
   (d) Trigonal planar

4. Which molecule is linear
   (a) NO_2 (b) ClO_2
   (c) CO_2 (d) H_2S

5. Which of the following molecules has trigonal planer geometry
   (a) IF_3 (b) PCl_3
   (c) NH_3 (d) BF_3

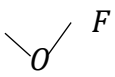
6. A sp^3 hybridized orbital contains
   (a) $\frac{1}{4}s$ –character
   (b) $\frac{1}{2}s$ –character
   (c) $\frac{2}{3}s$ –character
   (d) $\frac{3}{4}s$ –character

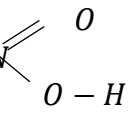
7. Structure of ammonia is
   (a) Trigonal
   (b) Tetrahedral
   (c) Pyramidal
   (d) Trigonal pyramidal

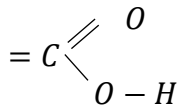
8. The bond angle in ethylene is
   (a) 180^o (b) 120^o
   (c) 109^o (d) 90^o

9. Compound formed by sp^3dhybridization will have structure
   (a) Planar
   (b) Pyramidal
   (c) Angular
   (d) Trigonal bipyramidal

10. Which of the following formula does not correctly represent the bonding capacity of the atom involved
   (a) $\begin{bmatrix} & H & \\ & | & \\ H & - P & - H \\ & | & \\ & H & \end{bmatrix}$

(b) 

(c) 

(d) 

11. Which of the following statement is not correct

(a) Hybridization is the mixing of atomic orbitals prior to their combining into molecular orbitals

(b) sp^2hybrid orbitals are formed from two p atomic orbitals and one HClatomic orbital

(c) d^2sp^3 hybrid orbitals are directed towards the corners of a regular octahedron

(d) dsp^3hybrid orbitals are all at $90^o$to one another

12. The mode of hybridisation of carbon in$sp^2 < sp < sp^3$is

(a) sp

(b) sp^2

(c) sp^3

(d) None of these

13. In which of the following the central atom does not use sp^3 hybrid orbitals in its bonding

(a) BeF_3^-

(b) OH_3^+

(c) NH_2^-

(d) $CH_3CH_2CH_2OH$

14. XeF_2 involves hybridisation

(a) sp^3

(b) sp^3d

(c) sp^3d^2

(d) None of these

15. Which of the following hybridisation results in non-planar orbitals

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

(c) sp^2 (d) sp

16. Octahedral molecular shape exists in ..... hybridisation

(a) sp^3d

(b) sp^3d^2

(c) sp^3d^3

(d) None of these

17. The electronic structure of molecule OF_2 is a hybrid of

(a) sp (b) sp^2

(c) sp^3 (d) sd^3

18. Percentage of s-character in sp^3hybrid orbital is

(a) 25 (b) 50

(c) 66 (d) 75

19. Shape of XeF_4molecule is

(a) Linear

(b) Pyramidal

(c) Tetrahedral

(d) Square planar

20. For which of the following hybridisation the bond angle is maximum

(a) sp^2 (b) sp

(c) sp^3 (d) dsp^2