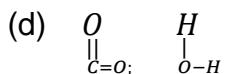


## Hybridisation

21. The  $C - H$  bond distance is the longest in
- (a)  $C_2H_2$       (b)  $C_2H_4$   
 (c)  $C_2H_4Br_2$       (d)  $C_6H_6$
22. The nature of hybridization in  $CH_2Cl - CH_2Cl$  for carbon is
- (a)  $sp$       (b)  $sp^2$   
 (c)  $sp^3$       (d)  $sp^2d$
23. Shape of methane molecule is
- (a) Tetrahedral  
 (b) Pyramidal  
 (c) Octahedral  
 (d) Square planar
24. Which one amongst the following possesses an  $sp$  hybridized carbon in its structure
- (a)  $CaI_2$   
 (b)  $C(Cl)_2 = C(Cl)_2$   
 (c)  $CH_2 = C = CH_2$   
 (d)  $CH_2 = CH - CH = CH_2$
25. Which of the following is the correct electronic formula of chlorine molecule
- (a)  $:\ddot{Cl}:\ddot{Cl}:$       (b)  $:\ddot{Cl}^-:\ddot{Cl}^+:$
26. In  $XeF_4$  hybridization is
- (a)  $sp^3d^2$       (b)  $sp^3$   
 (c)  $sp^3d$       (d)  $sp^2d$
27. In  $HCHO$ , 'C' has hybridization
- (a)  $sp$       (b)  $sp^2$   
 (c)  $sp^3$       (d) All the above
28. Which has the shortest  $C - C$  bond length
- (a)  $C_2H_5OH$       (b)  $C_2H_6$   
 (c)  $C_2H_2$       (d)  $C_2H_4$
29. The hybridization of Ag in the linear complex  $[Ag(NH_3)_2]^+$  is
- (a)  $dsp^2$       (b)  $sp$   
 (c)  $sp^2$       (d)  $CCl_4$
30. Experiment shows that  $H_2O$  has a dipole moment while  $CO_2$  has not. Point out the structures which best illustrate these facts
- (a)  $O = C = O$ ;  $\begin{array}{c} O \\ || \\ C \\ || \\ O \end{array}$   
 (b)  $O = C = O$ ;  $H - O - H$   
 (c)  $\begin{array}{c} \diagup \\ C \\ \diagdown \end{array}$ ;  $H - H -$





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31. Which species do not have  $sp^3$  hybridization

  - Ammonia
  - Methane
  - Water
  - Carbon dioxide

32. As compared to pure atomic orbitals, hybrid orbitals have

  - Low energy
  - Same energy
  - High energy
  - None of these

33. The compound 1, 2-butadiene has

  - Only  $s$  hybridized carbon atoms
  - Only  $sp^2$  hybridized carbon atoms
  - Both  $sp$  and  $sp^2$  hybridized carbon atoms
  - $sp$ ,  $sp^2$  and  $sp^3$  hybridized carbon atoms

34. The number of unpaired electrons in  $O_2$  molecule is

  - 0
  - 1
  - 2
  - 3

35. In the following molecule, the two carbon atoms marked by asterisk (\*) possess the following type of hybridized orbitals  $H_3C - C^* \equiv C^* - CH_3$

(a)  $sp^3$  orbital      (b)  $sp^2$  orbital  
(c)  $sp$  orbital      (d)  $s$  orbital

36. The bond angle in carbon tetrachloride is approximately

(a)  $90^\circ$       (b)  $109^\circ$   
(c)  $120^\circ$       (d)  $180^\circ$

37. When two pairs of electrons are shared, bond is

(a) Single covalent bond  
(b) Double covalent bond  
(c) Dative bond  
(d) Triple bond

38. The nature of hybridization in the  $BCl_3$  molecule is

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

39. Which one of the following compounds has bond angle as nearly  $90^\circ$

(a)  $NH_3$       (b)  $H_2S$   
(c)  $H_2O$       (d)  $CH_4$

40. In ethene, the bond angle(s) is/are



- (a)  $109^\circ 28'$
- (b)  $120^\circ$
- (c)  $180^\circ$
- (d) Different

