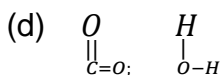


## Hybridisation

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)  $:\ddot{Cl}^-::\ddot{Cl}^+:$   
 (c)  $:\ddot{Cl}:\ddot{Cl}:$  (d)  $:\ddot{Cl}::\ddot{Cl}:$
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)  $O = C = O$ ;  $H - \overset{O}{\curvearrowright} - H$   
 (b)  $O = C = O$ ;  $H - O - H$   
 (c)  $\begin{array}{c} \text{O} \\ \parallel \\ \text{C} \\ \parallel \\ \text{O} \end{array}$ ;  $H - H -$





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

- (a) Ammonia
- (b) Methane
- (c) Water
- (d) Carbon dioxide

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

- (a) Low energy
- (b) Same energy
- (c) High energy
- (d) None of these

33. The compound 1, 2-butadiene has

- (a) Only  $sp$  hybridized carbon atoms
- (b) Only  $sp^2$  hybridized carbon atoms
- (c) Both  $sp$  and  $sp^2$  hybridized carbon atoms
- (d)  $sp$ ,  $sp^2$  and  $sp^3$  hybridized carbon atoms

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

- (a) 0
- (b) 1
- (c) 2
- (d) 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

