

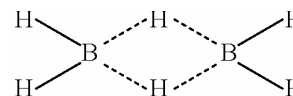
Daily Tutorial Sheet-9

Level - 2

106.(B) In  $B_2H_6$ , we have

Each B atom forms four  $\sigma$  bonds involving three electron pairs.

Hybridisation = 4  $\rightarrow$   $sp^3$



107.(CD)  $IF_7 \longrightarrow sp^3d^3$  Pentagonal bipyramidal

$[AlF_6]^{3-} \longrightarrow sp^3d^2$  Octahedral

$BrF_5$  &  $SeOF_4 \longrightarrow sp^3d^2$  square pyramidal

108.(B)  $ClF_3 \rightarrow sp^3d$

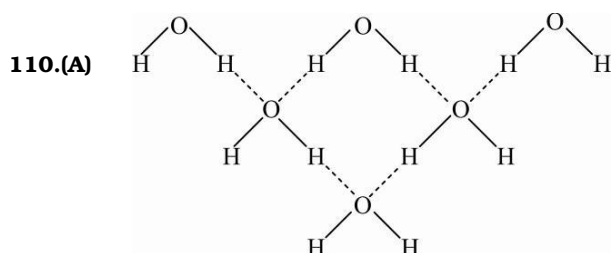
$PCl_5 \rightarrow sp^3d$

$PF_5 \rightarrow sp^3d$

$CCl_4 \rightarrow sp^3$

$XeF_4 \rightarrow sp^3d^2$

109.(B) More s character in  $sp$  - hybridized carbon (50%)



111.(B)  $NH_3$  &  $NH_4^+ \longrightarrow sp^3$

$BF_3 \longrightarrow sp^2$  and  $BF_4^- \longrightarrow sp^3$

$H_2O$  &  $H_3O^+ \longrightarrow sp^3$

$C_2H_2 \longrightarrow sp$  and  $C_2H_6 \longrightarrow sp^3$

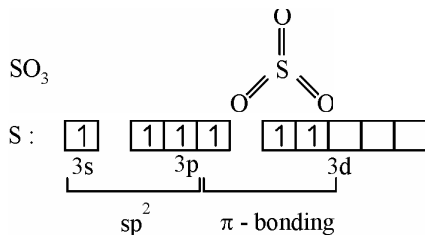
112.(ABC)  $NF_3$  does not have an empty p orbital necessary for  $p\pi - p\pi$  bonding

$BF_3 \longrightarrow p\pi - p\pi$  back bonding ;  $SO_2 \longrightarrow p\pi - p\pi$  and one  $d\pi - p\pi$  bonding

$CO_2 \longrightarrow$  Two  $p\pi - p\pi$  bonding

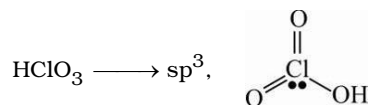
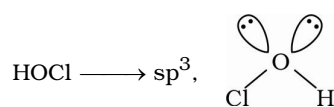
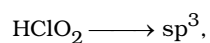
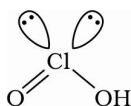
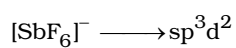
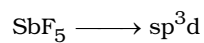
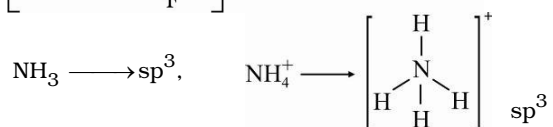
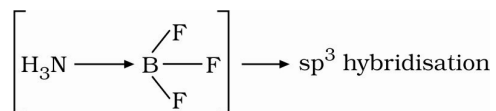
113.(ABD)  $He_2$  does not exist - Bond Order zero

$BiCl_5$  does not exist because of the inert pair effect



$\therefore$  Two  $d\pi - p\pi$  & one  $p\pi - p\pi$  bonds ;  $SeF_4 \longrightarrow sp^3d$  (VSEPR Theory)

**114.(AC)**  $\text{BF}_3 \longrightarrow \text{sp}^2$  hybridisation



**115.(D)** Silicon (Si), like carbon(C), has four valence electrons and is capable of forming  $\text{sp}^3$  hybrid orbitals. In case of  $\text{Si}(\text{CH}_3)_4$ , we have

