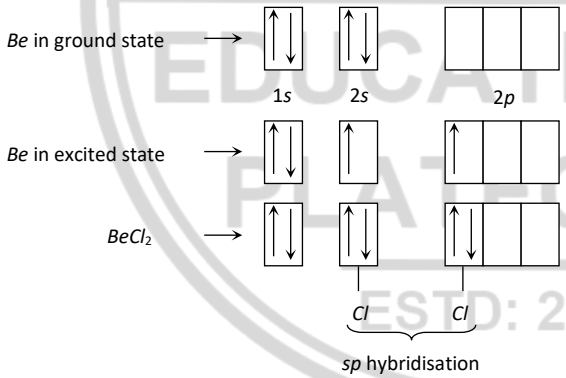
Hybridisation

141. (a) Compound containing highly electronegative element (*F*, *O*, *N*) attached to an electropositive element (*H*) show hydrogen bonding. Fluorine (*F*) is highly electronegative and has smaller size. So hydrogen fluoride shows the strongest hydrogen bonding in the liquid phase.

142. (b) In the ammonia molecule *N* atom is sp^3 –hybridized but due to the presence of one lone pair of e^- (*i.e.* due to greater $L_p - b_p$ repulsion) it has distorted tetrahedral (or pyramidal) geometry.

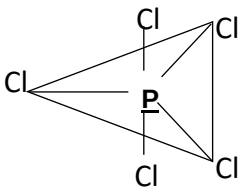
143. (a) $_4Be \rightarrow 1s^2, 2s^2, 2p^0$



(Linear diagonal hybridization)

144. (a) Except CO_3 other choice CO_2, CS_2 and $BeCl_2$ have sp – hybridization and shows the linear structure while CO_3 have sp^3 hybridization and show the non linear structure because sp^3 generate tetrahedral structure.

145. (a) dsp^3 or sp^3d hybridization exhibit trigonal bipyramidal geometry *e.g.*, PCl_5



sp^3d^2 (Trigonal bipyramidal)

146. (b) Carbon has only two unpaired electrons by its configuration but hybridization is a concept by which we can explain its valency 4.

147. (c) Hybridization is due to overlapping of orbitals of same energy content.

148. (d) MX_3 show the sp^2 hybridization in which $3sp^2$ hybridized orbital of M bonded by $_3X$ from $_\sigma$ bond and having the zero dipole moment.

149. (bcd) $SnCl_2$ has V – shaped geometry.

150. (a) NF_3 is predominantly covalent in nature and has pyramidal structure (the central atom is sp^3 hybridised) with a lone pair of electrons in the fourth orbital.

151. (ac) $PCl_3, NH_3 \rightarrow$ Pyramidal.

$CH_4, CCl_4 \rightarrow$ Tetrahedral.

152. (a) dsp^3 or sp^3d: one s^+ three p^+ one $d(d_{z^2})$.