

Symmetry Element(s)                      Point group

$C_n$  present                       $\Rightarrow$                        $C_n$

$C_n + \sigma_v$                        $\Rightarrow$                        $C_{nv}$

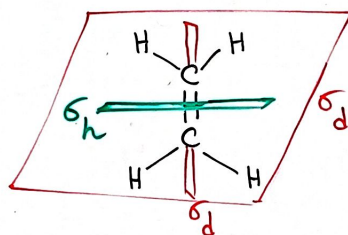
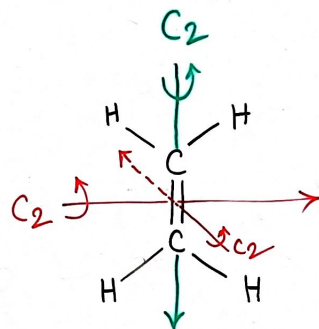
$C_n + \sigma_h$                        $\Rightarrow$                        $C_{nh}$

$C_n + \sigma_h + \sigma_v$                        $\Rightarrow$                        $C_{nh}$

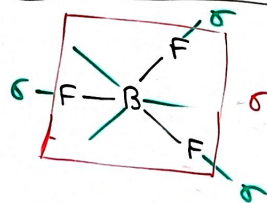
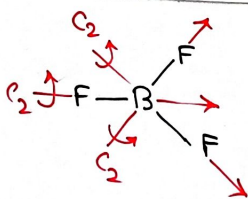
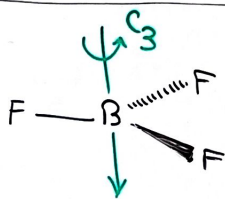
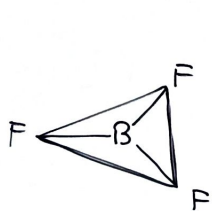
$C_n + \perp C_2$                        $\Rightarrow$                        $D_n$

$C_n + \perp C_2 + \sigma_{v/d}$                        $\Rightarrow$                        $D_{nd}$

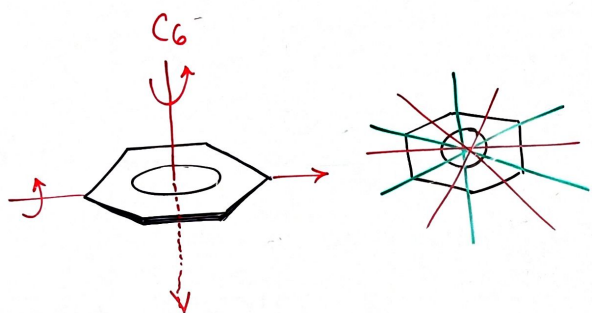
$C_n + \perp C_2 + \sigma_d + \sigma_h \Rightarrow D_{nh}$



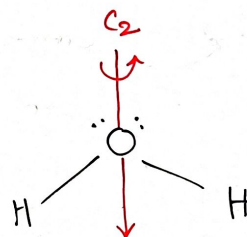
$C_1 + C_2 + 2 \perp C_2 + 2 \sigma_d + \sigma_h + i + S_2$   
 $= \underline{\underline{D_{2h}}}$



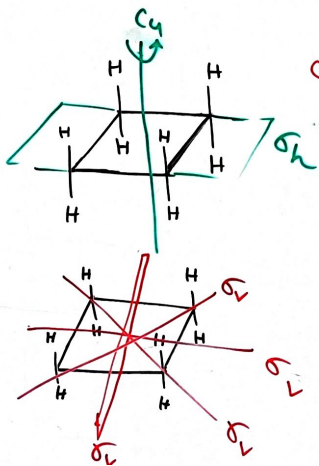
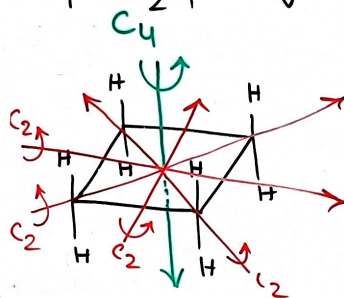
$C_1 + C_3 + 3 \perp C_2 + 3 \sigma_d + \sigma_h = \underline{\underline{D_{3h}}}$



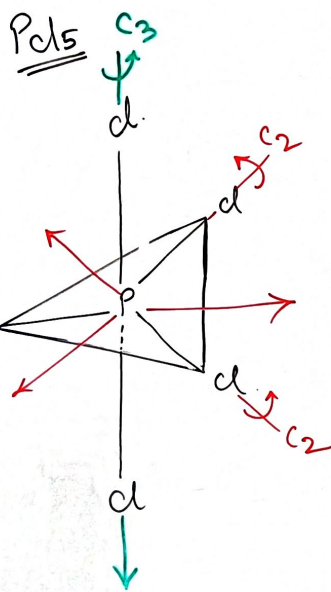
$$C_1 + C_6 + 6 \perp C_2 + 6 \sigma_d + \sigma_h + i + S_2 = D_{6h}$$



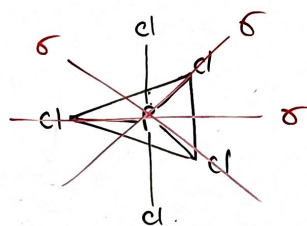
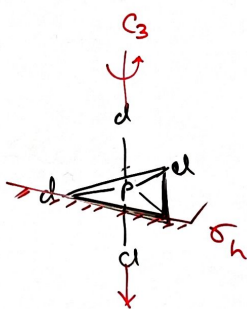
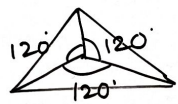
$$C_1 + C_2 + 2 \sigma_v = C_{2v}$$



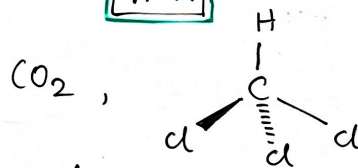
$$C_1 + C_4 + 4 \perp C_2 + 4 \sigma_d + \sigma_h + i + S_2 = D_{4h}$$



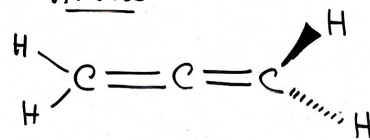
$$\theta = \frac{360^\circ}{n} = \frac{360^\circ}{120} = 3$$



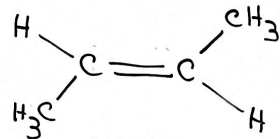
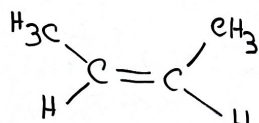
H.W



Allene



SO<sub>2</sub> ;



$$C_1 + C_3 + 3 \perp C_2 + 3 \sigma_v + \sigma_h = D_{3h}$$