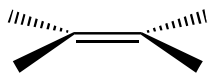
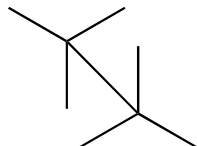


Find all of the symmetry operations (rotation axes, mirror planes, and inversion centers) present in each of the following molecules. Also state whether the molecule is chiral or achiral. Assume the molecules are "frozen" in the conformations shown.

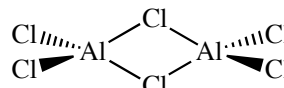
a)



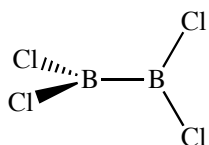
b)



c)



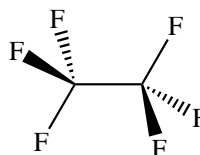
d)



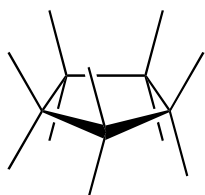
e)



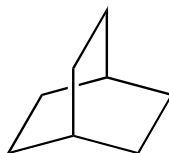
f)



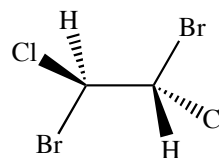
g)



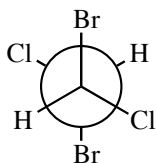
h)



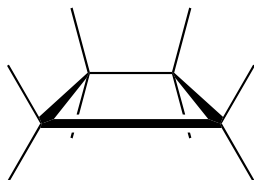
i)



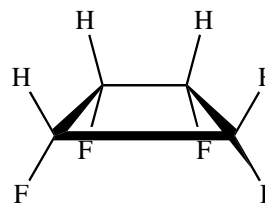
j)



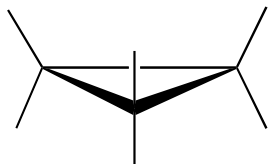
k)



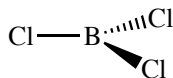
l)



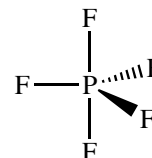
m)



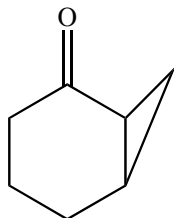
n)



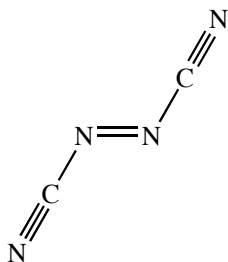
o)



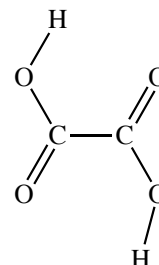
p)



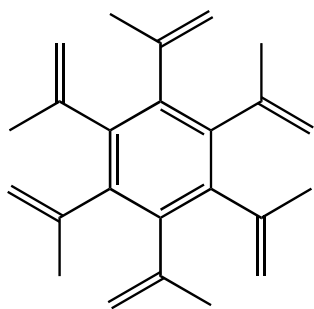
q)



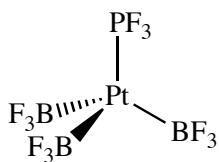
r)



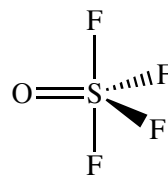
s)



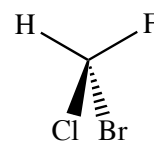
t)



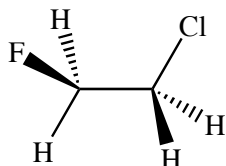
u)



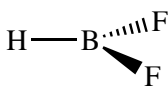
v)



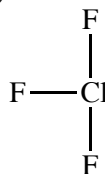
w)



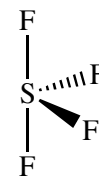
x)



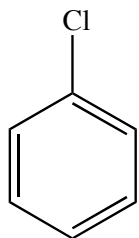
y)



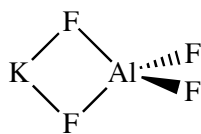
z)



aa)



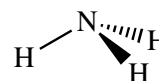
bb)



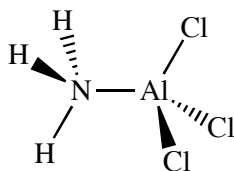
cc)



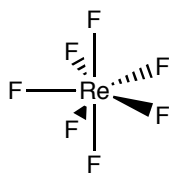
dd)



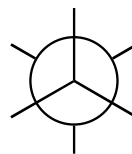
ee)



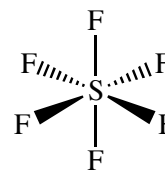
ff)



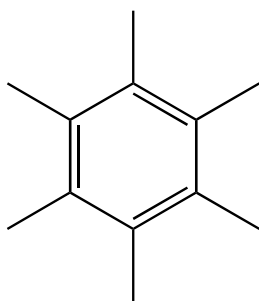
gg)



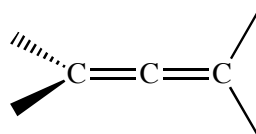
hh)



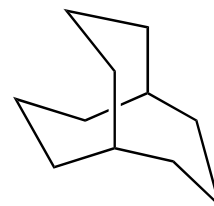
ii)



jj)



kk)



ll)

