

Symmetry of Molecules and Group Theory (Hagiwara)

Problem Set #2(For Chapter 2&3) 2019/10/09

1. Draw a stereographic projection of D_{2h} . Work out the multiplication table.
2. Assign the point groups to the following molecules.
a) SO_2 , b) BF_3 , c) HF_2^- , d) 1,2-dichloroethane e) 1,2-dichloroethene
f) cyclohexane
3. Using the matrix methods, verify the following commutations of symmetry operations.
 - 1) Two rotations about the same axis.
 - 2) Reflections through planes perpendicular to each other.
 - 3) The inversion and any reflection or rotation.
 - 4) Two C_2 rotations about perpendicular axes.
 - 5) Rotation and reflection in a plane perpendicular to the rotation axis.