

# Recitation Problems



1) Work out the multiplication table for the  $C_{2h}$  group

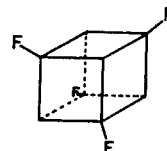
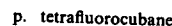
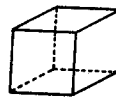
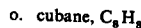
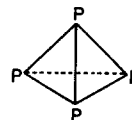
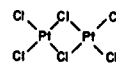
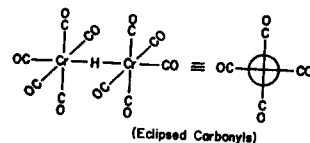
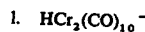
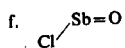
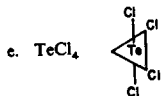
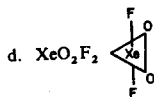
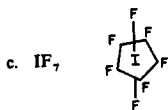
2) Try to write a mathematical notebook that will make all possible combinations of Eigenvalues (+1, -1). This will be very handy for the rest of this worksheet and for the problem set. If you are unable to do this see me for a function that will do it.

3) Determine ~~all~~ possible vectors for the  $C_{2h}$  group. Then construct the character table from them.

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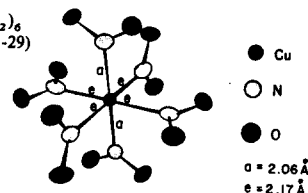
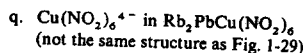
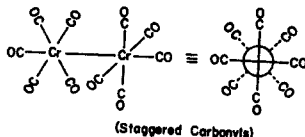
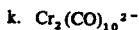
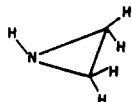
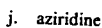
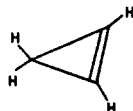
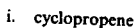
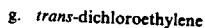
1-10. Assign each molecule below to the proper point group.

- a.  $O=C=C=C=O$  (linear)      b. HF



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## Symmetry and spectroscopy



(Structure redrawn from S. Takagi, M.D. Joesten, and P.G. Lenhart, *J. Amer. Chem. Soc.*, 97, 444 [1975].)

