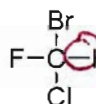
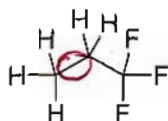
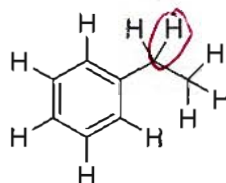
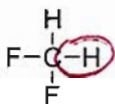


1) In a typical perfluoroalkane, the bond between which two atoms is generally the weakest?

The Carbon-Carbon bond.

2-5) Circle the weakest **sigma** bond in each molecule:



6-8)  $C_4F_{10}$  has a molecular weight over four times that of  $C_4H_{10}$ , yet their boiling points are less than  $1^\circ C$  different – why?

The increase in MW should increase the boiling point. However the decrease in intermolecular interactions (because of the lone pair of electrons on the fluorines) decreases the boiling point.

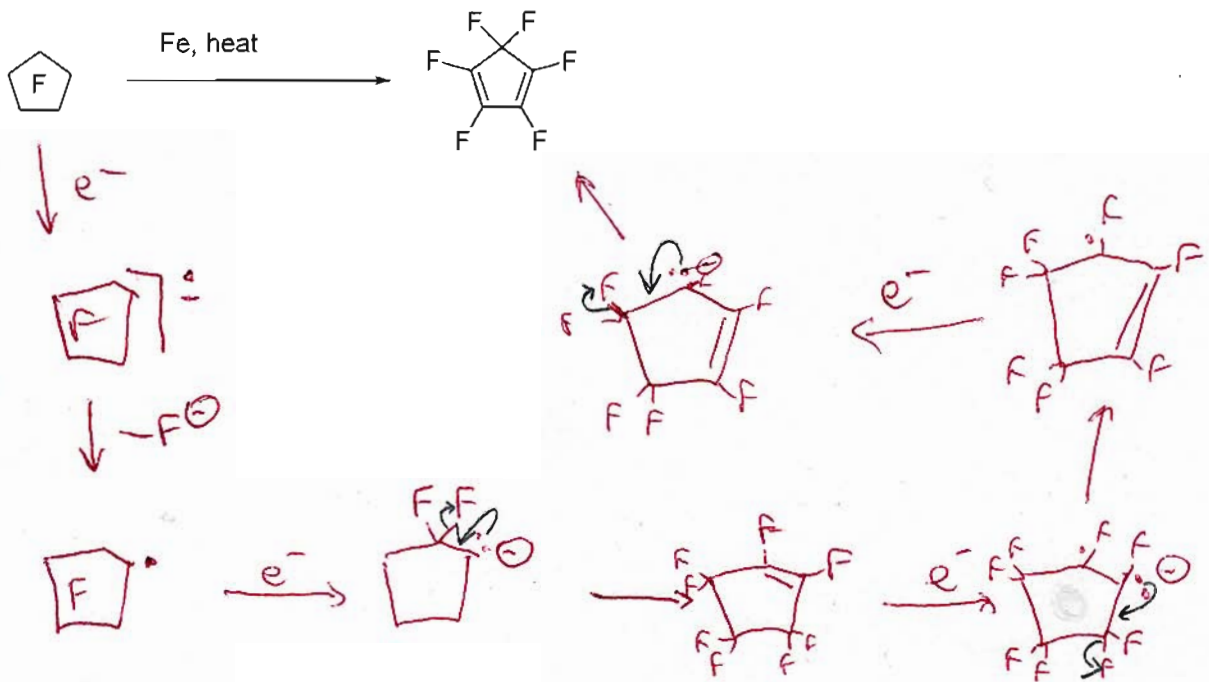
9) Perfluoroalkanes undergo usually only one type of reaction. Name it.

Reductive Defluorination.

10-12) State three facts about ozone depletion and the Montreal Protocol.  
(Do not show any chemical equations!)

Started in 1987; concerned with the reduction & phasing out of CFCs which destroy the ozone; mainly CFCs & freons; ozone hole is above Antarctica; protocol is working;

13-16) Write the mechanism for the following reaction:



17-20) Draw in the 4 curly arrows for this mechanism.

