1) Where does the name 'fluorine' come from?

From the latin word "fluerere" (to flow) since fluorine has good fluing abilities.

2) The best organic solvents for HALEX reactions using alkali metal fluorides (e.g. KF) have two certain chemical features. Name these two properties.

Polar (high dielectric constant) & Apotic (no acidic H's)

3) What is the biggest problem with using elemental fluorine as a reagent for converting C-H to C-F?

Very Exothermic

4-5) Provide the products in these reactions.

6-7) Provide reagents to achieve this transformation.

8-10) Provide the products.
11-13) Provide the mechanism (i.e. use curly arrows) for this transformation.

\[
\text{Cl} \quad \text{Cl} \quad \text{Cl} \quad \text{Cl} \quad \text{Cl}
\]

\[
\text{CCl}_3 \quad \xrightarrow{\text{HF, SbF}_5} \quad \text{CF}_3
\]

14-16) Provide the mechanism (i.e. use curly arrows) for this transformation.

\[
\text{KF, N.M.P.} \quad 180^\circ C
\]

Not S_N2 but S_N2'
17-20) State what a CFC is, and explain why they are detrimental to the environment.

A CFC is a compound that contains chlorine, fluorine and carbon atoms (chlorofluorocarbon).

CFC's that are released into the environment will float up into the stratosphere, and react with the UV rays. This creates chlorine radicals which then destroy the ozone layer. \( \text{O}_3 \rightarrow \text{O}_2 \)

\[ \text{Eg. } \text{CF}_2\text{Cl} \rightarrow \cdot\text{CF}_2\cdot + \cdot\text{Cl} \]

Then \( \text{Cl} + \text{O}_3 \rightarrow \text{ClO} + \text{O}_2 \)

\( \text{ClO} + \text{O}_3 \rightarrow \cdot\text{Cl} + 2\text{O}_2 \)

This carries on the chain process.

Overall \( 2\text{O}_3 \rightarrow 3\text{O}_2 \) catalyzed by \( \text{Cl}\cdot \)