1-2) Draw the aromatic product produced in this reductive defluorination reaction.

3-7) Draw the mechanism for this reaction.
8-13) Explain why PFIB is more reactive towards nucleophiles than TFE.

\[
\text{(TFE) less reactive} \quad < \quad \text{(PFIB) more reactive}
\]

\[
\text{CF}_2\text{CF}_2 \quad < \quad \text{CF}_2\text{C(CF}_3\text{)}_2
\]

The reactivity is related to the stability of the intermediates:
- Less stable anion leads to more reactive intermediate.
- More stable anion leads to less reactive intermediate.

Fluorines that are directly attached to a carbanionic centre are destabilizing. These "α fluorines" have e⁻/e⁻ repulsions which are worse than their neighbouring σ withdrawing effect.

Fluorines that are two bonds away from a carbanionic centre are stabilizing. These "β fluorines" are strongly electron withdrawing.

14-15) Draw the products.

\[
\text{F} = \text{Cl} \quad \xrightarrow{\text{NaOCH}_3} \quad \text{F} = \text{Cl}
\]

\[
\text{F} = \text{C} \quad \xrightarrow{\text{NaOCl}} \quad \text{F} = \text{C}
\]

& E isomer

2008FluoroQ3
16-18) Circle the correct answer:

... has a boiling point that is LOWER / HIGHER / SIMILAR to...

... has a boiling point that is LOWER / HIGHER / SIMILAR to...

... has a boiling point that is LOWER / HIGHER / SIMILAR to...

19-20) Write a mechanism for the reaction of difluorocarbene with \( \text{CF}_2=\text{CF}_2 \) to give \( \text{CF}_2=\text{CFCF}_3 \):