**Special Problem II.B-21**

An engineer is designing a receiver for use in a remote location on the Earth—so remote that **only two** radio stations exist!

The first radio station broadcasts at **100 MHz**, while the second transmits at **220 MHz**—there are **no other** signals present anywhere in the electromagnetic spectrum.

Since there are **only two** signals present at the receiver input, the engineer decides to save money by **eliminating the preselector** filter from the receiver design!
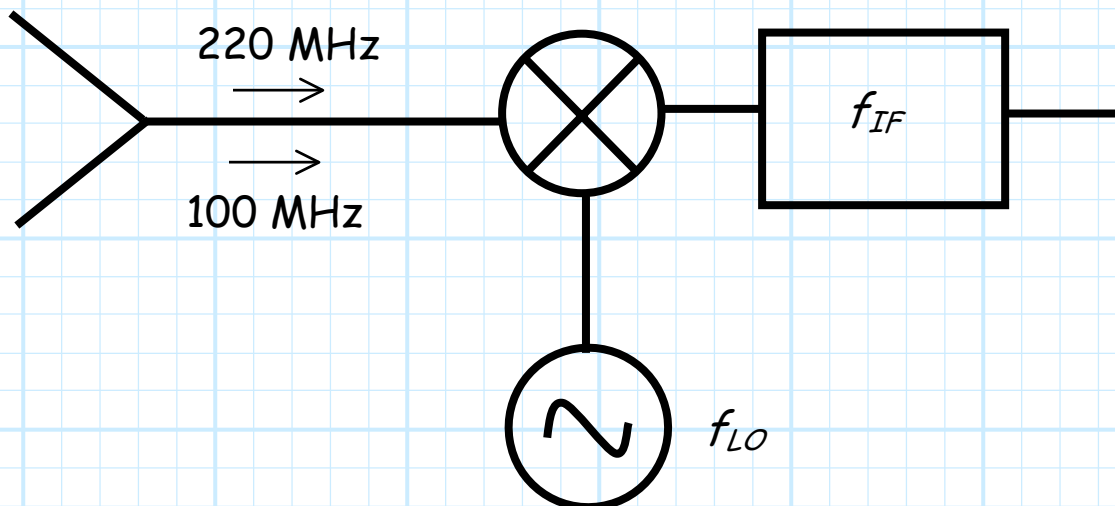
He/She decides to use **high-side tuning**, and is considering the following **IFs** for this design.

1. 20 MHz
2. 60 MHz
3. 100MHz
4. 200 MHz
5. 220 MHz

The engineer **first** considers the problem of tuning to the **100 MHz** station.   **TURN THE PAGE !!!**

It turns out that **none** of these IFs will work when tuning to the **100 MHz** station (with high-side tuning and no preselctor)!

Determine **the problem** for **each** of these 5 potential Intermediate Frequencies (when tuning to the **100 MHz** station).