Problem R-10F (C\textsubscript{12}H\textsubscript{16}OSe)
100 MHz \textsuperscript{1}H NMR Spectrum in CCl\textsubscript{4}
Source: Hans Reich (digitized hard copy)
Problem R-10F (C\textsubscript{12}H\textsubscript{16}OSe). In this problem you are required to determine a structure from the IR and \textsuperscript{1}H NMR spectra of a compound. The compound contains a Ph-Se group.

(a) DBE ____________.  (b) Report your analysis of the IR spectrum (CCl\textsubscript{4}). List the data and any conclusions you drew from it.

(c) Interpret the 2-proton multiplet at \(\delta 2\) to \(\delta 3\). What do these signals tell you about the structure. Draw a coupling tree above it to show you understand the multiplet.

(c) Interpret the remaining multiplets in the NMR spectrum. Give multiplicity, coupling constants and part structures you were able to obtain from the signal.

\(\delta 1.0\) ____________________________________

\(\delta 1.7\) ____________________________________

\(\delta 3.5\) ____________________________________

e) Draw the structure of R-10F below. Label it with chemical shifts.
Problem R-10F \((\text{C}_{12}\text{H}_{16}\text{OSe})\)
100 MHz \(^1\text{H}\) NMR Spectrum in \(\text{CCl}_4\)
Source: Hans Reich (digitized hard copy)
Problem R-10F \((\text{C}_{12}\text{H}_{16}\text{OSe})\). In this problem you are required to determine a structure from the IR and \(^1\text{H}\) NMR spectra of a compound. The compound contains a Ph-Se group.

(a) DBE \(5\) .

(b) Report your analysis of the IR spectrum (CCl\(_4\)). List the data and any conclusions you drew from it.

\[
\begin{align*}
1710 \text{ cm}^{-1} & \quad \text{Ketone} \\
3050 \text{ cm}^{-1} & \quad \text{Ar-CH}
\end{align*}
\]

(c) Interpret the 2-proton multiplet at \(\delta 2\) to \(\delta 3\). What do these signals tell you about the structure. Draw a coupling tree above it to show you understand the multiplet.

![Coupling Tree](image)

(c) Interpret the remaining multiplets in the NMR spectrum. Give multiplicity, coupling constants and part structures you were able to obtain from the signal.

\[
\begin{align*}
\delta 1.0 & \quad 6\text{ H} \quad 2\text{ triplets, } J = 7 \text{ Hz}, \quad 2\times \text{CH}_3\text{CH}_2 \\
\delta 1.7 & \quad 2\text{ H} \quad \text{m (actually AB of ABX}_3\text{Y)} \\
\delta 3.5 & \quad 1\text{ H} \quad (J=7 \text{ Hz}) \quad \text{X-CH}_2
\end{align*}
\]

e) Draw the structure of R-10F below. Label it with chemical shifts.

![Structure](image)