1. [10] Write a stepwise mechanism for the reaction given below. Use arrows appropriately to show the flow of electrons.

\[
\text{C}_6\text{H}_6 + \text{Cl}_2 &\xrightarrow{\text{FeCl}_3} \text{C}_6\text{H}_5\text{Cl} + \text{HCl}
\]

2. [10 pts] Draw the 4 different isomers (only consider constitutional isomers; do not consider stereoisomers) whose molecular formula is C\textsubscript{3}H\textsubscript{6}Br\textsubscript{2}. For each isomer, clearly indicate how many peaks are there in its proton-decoupled $^{13}$C-nmr spectrum?