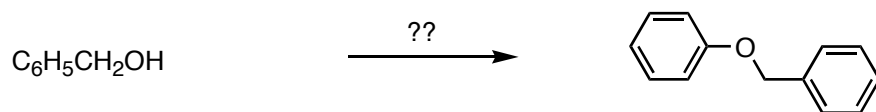


3. (10 pts) **Multistep Synthesis.** Provide reagents and the structure(s) of all intermediate cmpds that can be isolated. Do not provide mechanisms.



4. (10 pts) The mass spectrum of an unknown ketone has a molecular ion at $m/z = 114$ and fragment ions at $m/z = 86$, 85, and 57. The 86 ion is the result of a McLafferty fragmentation. Draw the structure of the unknown and structures of the fragment ions.