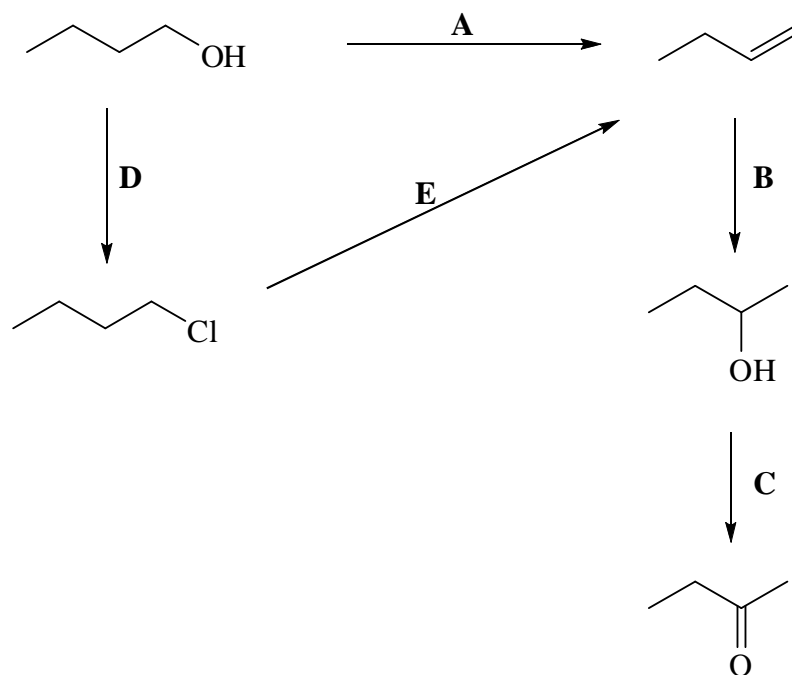


- Consider the following reaction sequence.



Clearly state the reagents required (including conditions and solvent where appropriate) for each of the steps.

A: hot, concentration $\text{H}_2\text{SO}_4(\text{aq})$ (dehydration)

B: cold, dilute $\text{H}_2\text{SO}_4(\text{aq})$ (acid catalysed addition of H-OH)

C: $\text{K}_2\text{Cr}_2\text{O}_7(\text{aq}) / \text{H}_2\text{SO}_4(\text{aq})$ (oxidation of secondary alcohol to ketone)

**D: hot, concentrated $\text{HCl}(\text{aq})$ or SOCl_2
(nucleophilic substitution of water soluble alcohol)**

E: hot, concentrated KOH in ethanol (elimination – heat and solvent prevents substitution)