

Chemistry 3.5

Advanced Organic Chemistry

Recap from Level 2

Level 2 reactions

- **Addition reactions**

- Breaking the double (or triple) bond by adding molecules

Alkene \rightarrow Alcohol

(reagent $\text{H}_2\text{O} / \text{H}^+$)

Alkene + HCl \rightarrow Chloroalkane

(reagent HCl)

Alkene \rightarrow Dichloroalkane

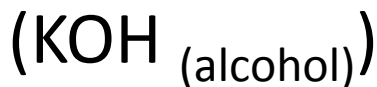
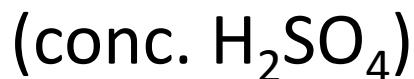
(reagent Cl_2)

- Hydrogen rich gets richer

Level 2 reactions

- **Elimination reactions**

- Eliminating two atoms (groups) to create a double bond



- Hydrogen poor gets poor

Level 2 reactions

- **Substitution reactions**

- replacing one group with another

- Alcohol \rightarrow Chloroalkane

- (PCl_5 or SOCl_2)

- Haloalkane \rightarrow Alcohol

- ($\text{KOH}_{(\text{aq})}$)

- Haloalkane \rightarrow Amine

- ($\text{NH}_{3(\text{alcohol})}$)

Level 2 reactions

- **Oxidation reactions**

- The reactions with an oxidant such as $\text{K}_2\text{Cr}_2\text{O}_7$ or KMnO_4 under acidic condition.

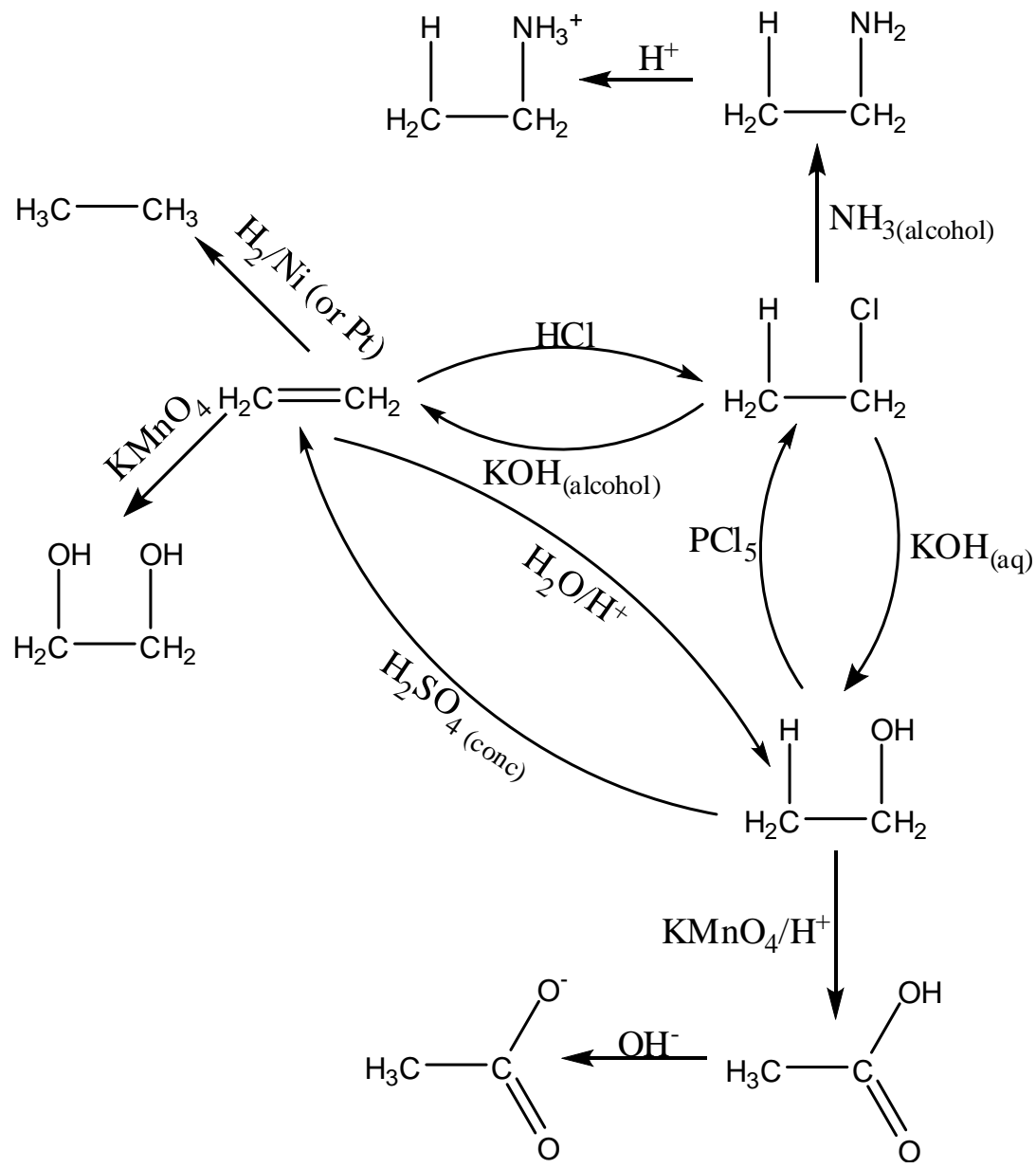
- $\text{K}_2\text{Cr}_2\text{O}_7/\text{H}^+$ orange to green

- KMnO_4/H^+ purple to colourless

Alkene \rightarrow diol

1° Alcohol \rightarrow Carboxylic acid

Level 2 Reaction scheme



Complete Worksheet 1