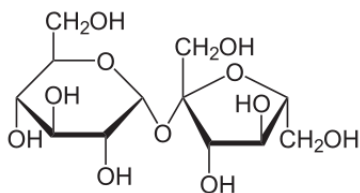


Overheads: - Today's Outline
- Old Ads

- 1) [Questions from first class](#)
- 2) [Recap: The Best and the Worst](#)

The best: glucose

Raymond "Sugar Ray" Lemieux":



- From Lac La Biche, AB, born 1920
- 1953: first to synthesize sucrose (considered the Mt Everest of Organic Chemistry)
- 1954: started Department of Chemistry at UOttawa
- 1961: Returned to UAlberta
- Won every award except Nobel
- Died 2000

The worst: nicotine

- 1 cigarette = ~ 1 mg nicotine inhaled
- LD₅₀ = 3 mg/kg in mice; 0.5-1 mg/kg in humans (disputed)
- Lethal dose ~ 30-60 mg in adult human (don't spill liquid on skin!)
- Not an identified carcinogen BUT *promotes* cancer.

Some interesting uses of well-known molecules

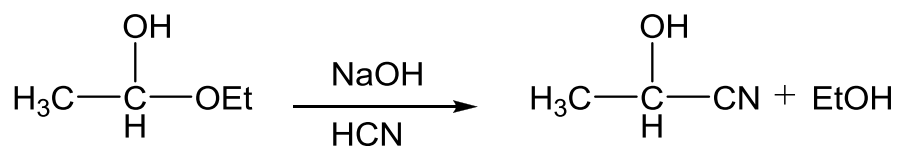
- 3) [Recap: Mechanisms](#)

3 Questions:

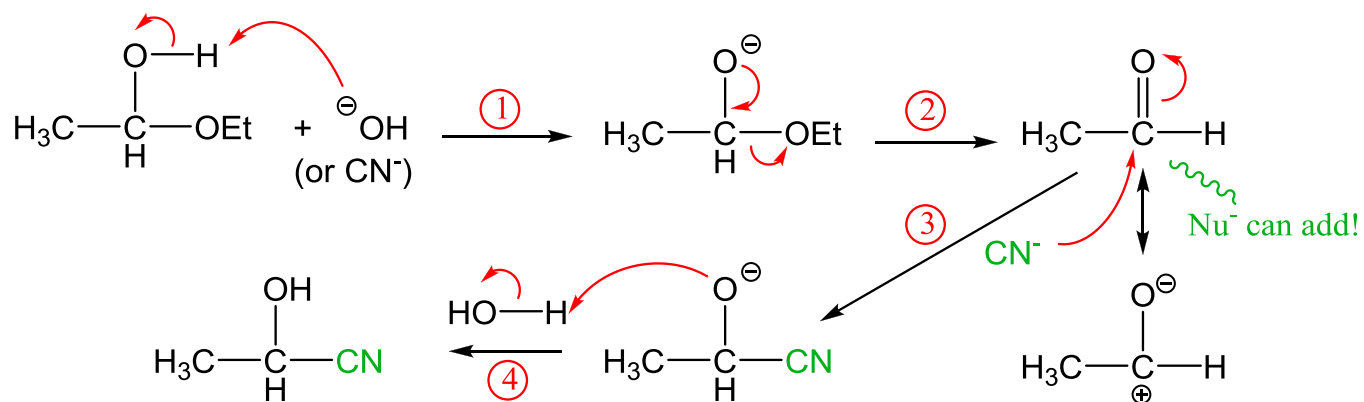
- 1) What is the strongest acid?
- 2) What is the strongest base?
- 3) Is there a good leaving group?

****If you haven't seen it (a reaction step) before it is probably wrong!**

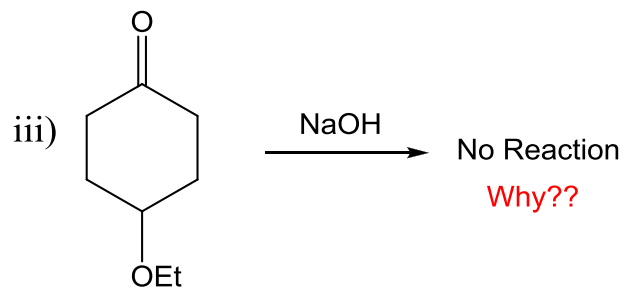
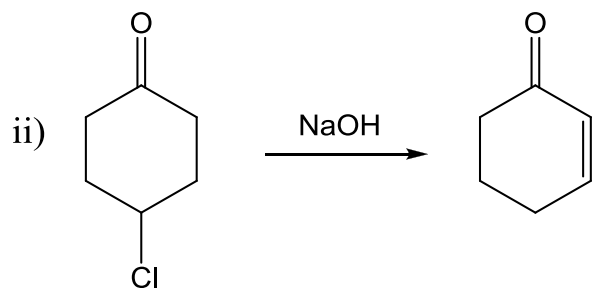
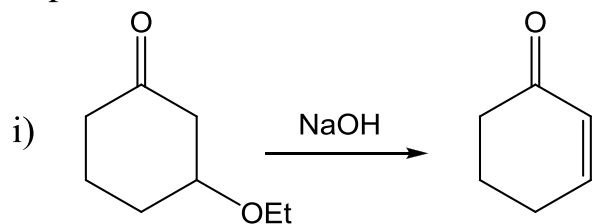
Problem from last class:

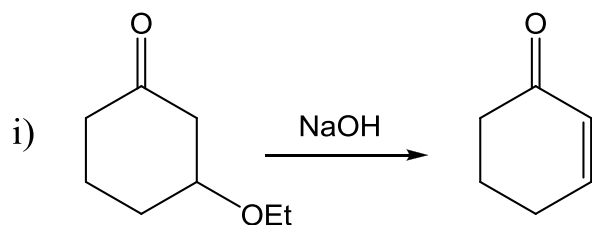


So far:



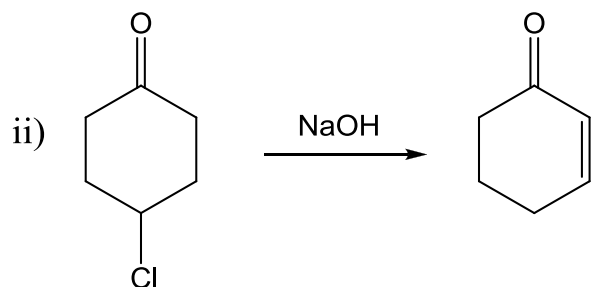
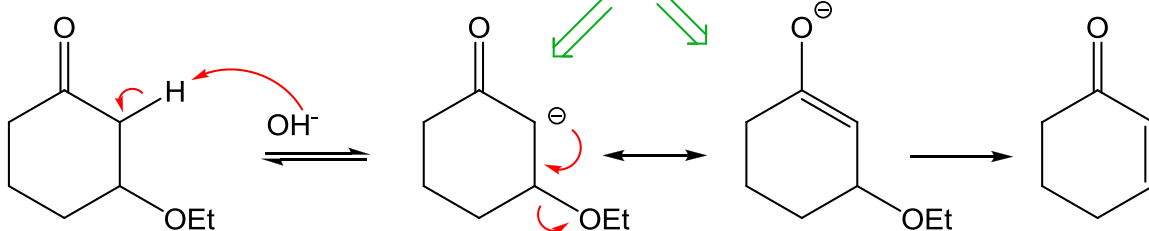
Explain three related reactions:





strongest base? OH^-

strongest acid? $\text{H } \alpha \text{ to C=O} \longrightarrow \text{enolate!}$

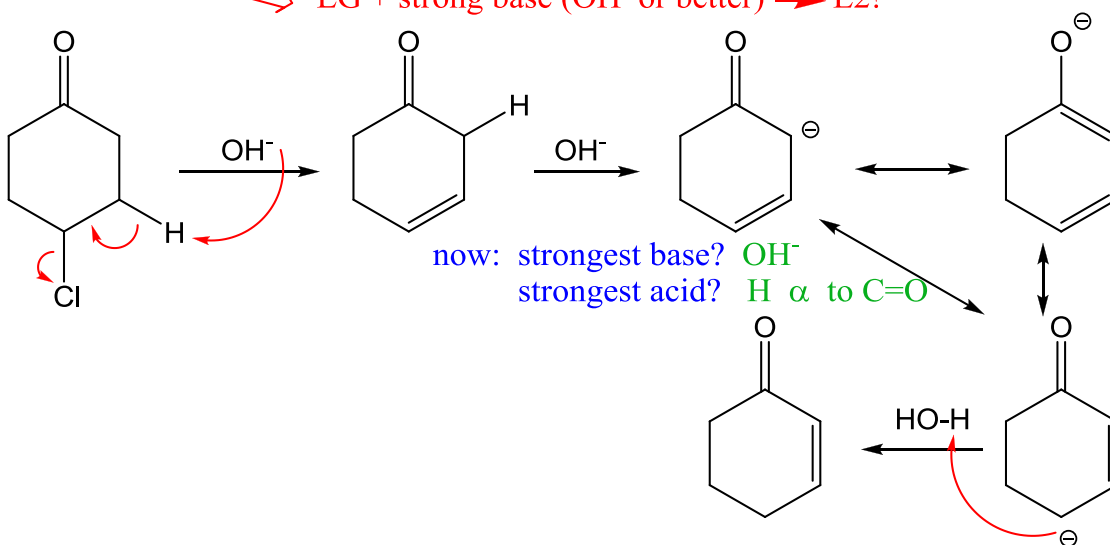


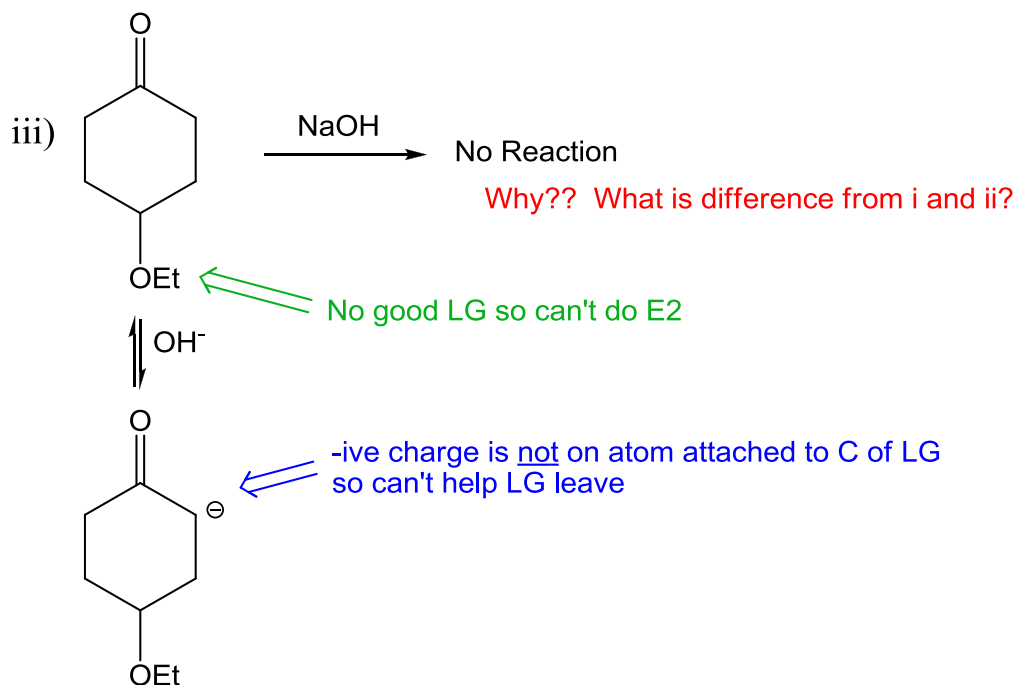
strongest base? OH^-

strongest acid? $\text{H } \alpha \text{ to C=O} \} \rightleftharpoons \text{enolate}^- \text{ (doesn't get us there)}$

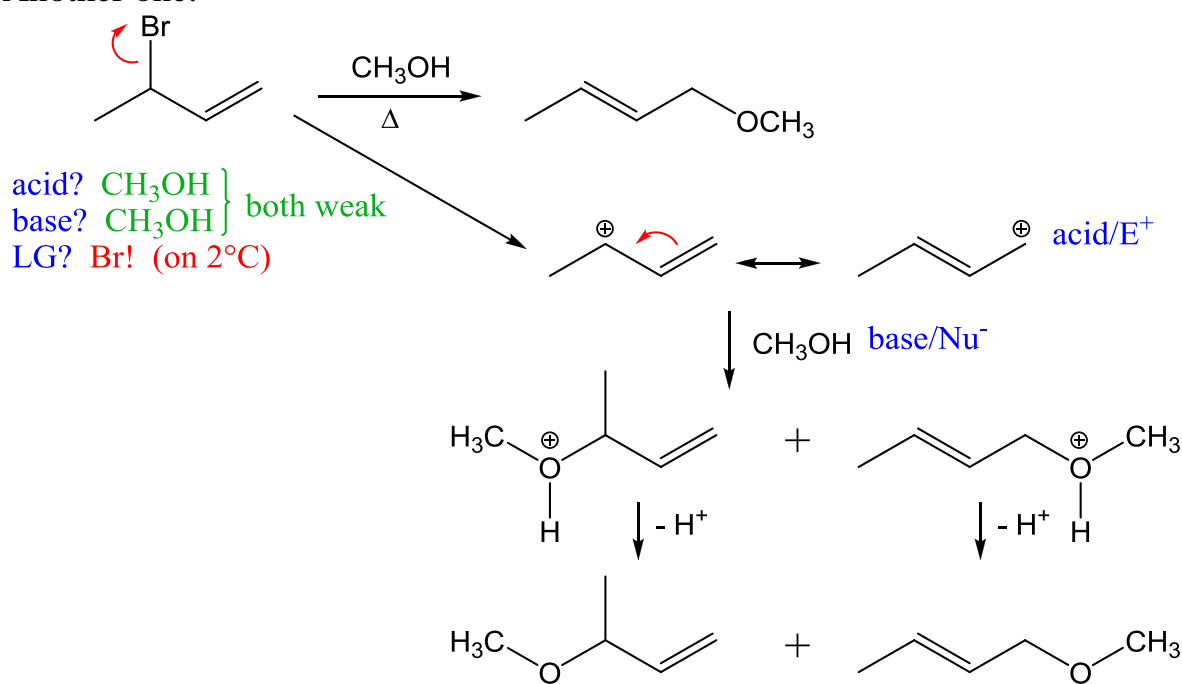
LG? **YES!!**

\Rightarrow LG + strong base (OH^- or better) \rightarrow E2!





Another one:



Kinetic vs Thermodynamic Products!

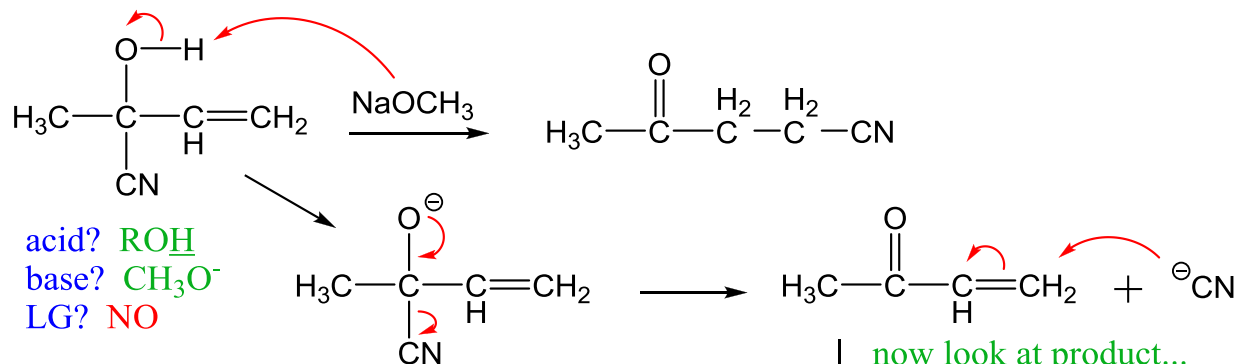
↓
formed fastest
(more stable C^+
and/or where C^+
initially formed)

↓
most stable
(= most substituted alkene)

⇓
HOT!!

why this one?

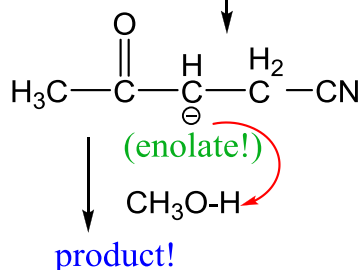
Last one:



now have O^- so
"bad" LG can leave

recall: HCN $\text{pK}_a = 9$
 H_2O $\text{pK}_a = 15$
 so CN^- is a weaker base
 (= better LG) than OH^-

now look at product...
where does CN^- add?



called a conjugate addition -
very important reaction -
will see more later