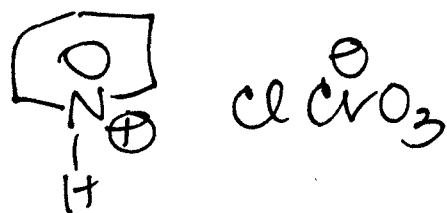


Oxidation Rxns

1. of alcohols

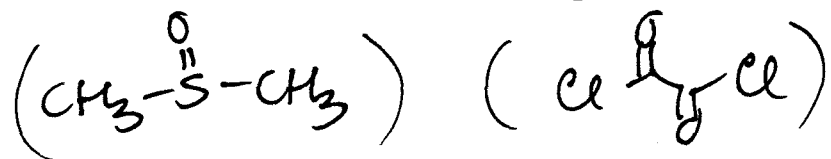
A. 1° alcohols \rightarrow aldehydes

a. PCC pyridinium chlorochromate



*b. Swern oxidation

DMSO, oxalyl chloride, Et_3N



1° alcohols \rightarrow carboxylic acids

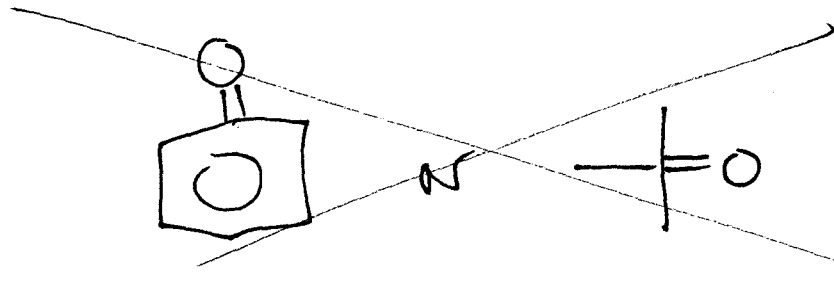
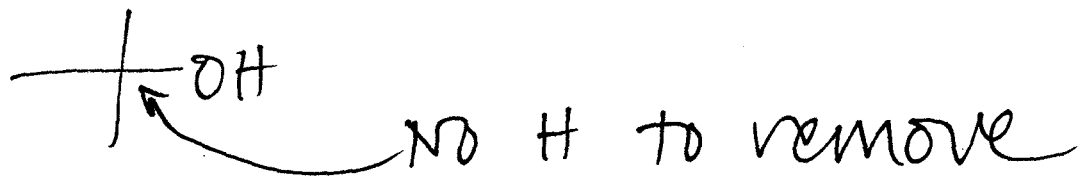
a. H_2CrO_4 or $\text{Na}_2\text{Cr}_2\text{O}_7$

b. KMnO_4

B. 2° alcohols \rightarrow ketones

any of the reagents in A above
will work.

C. 3° alcohols — non oxidizable



pentavalent
carbons!

2. of aldehydes \rightarrow carboxylic acids
* just about anything!

a. H_2CrO_4 or $\text{Na}_2\text{Cr}_2\text{O}_7$

b. KMnO_4

c. Ag_2O

d. Tollens' $\text{Ag}(\text{NH}_3)_2^+$

e. Baeyer-Villiger $\xrightarrow{\text{mCPBA}}$ (or other peracids)

3. of ketones

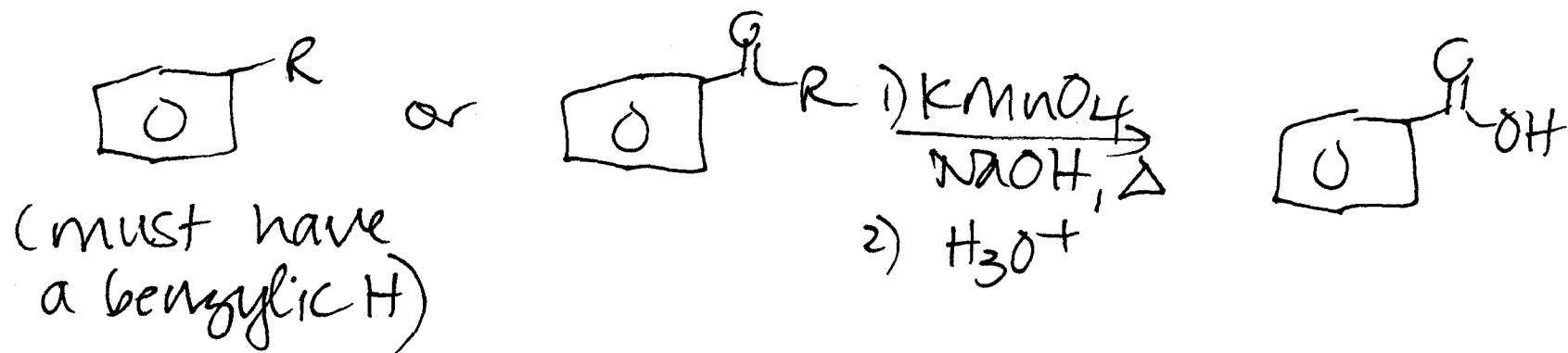
a. haloform rxn - $\text{CH}_3\text{C}(=\text{O})\text{R} \xrightarrow[2) \text{H}_3\text{O}^+]{1) \text{NaOH, } \overset{\text{xs.}}{\text{I}_2}} \text{HO}\text{C}(=\text{O})\text{R}$

b. Baeyer-Villiger - $\text{R}\text{C}(=\text{O})\text{R}' \xrightarrow{\text{mCPBA}} \text{R}\text{C}(=\text{O})\text{OR}'$

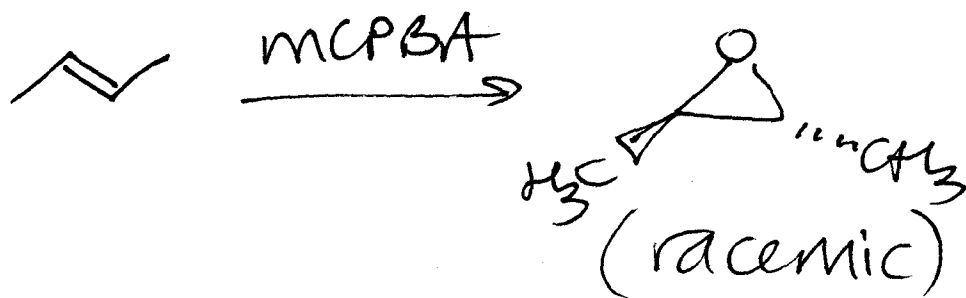
* migratory aptitudes of R

$\text{H} > \text{Ph} > 3^\circ > 2^\circ > 1^\circ > \text{CH}_3$

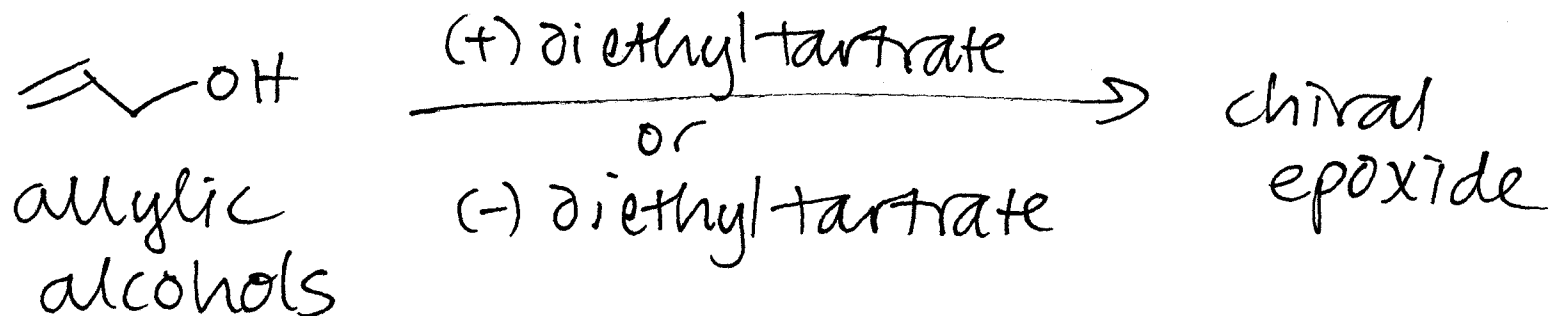
4. of aromatic side chains



5. Epoxidation

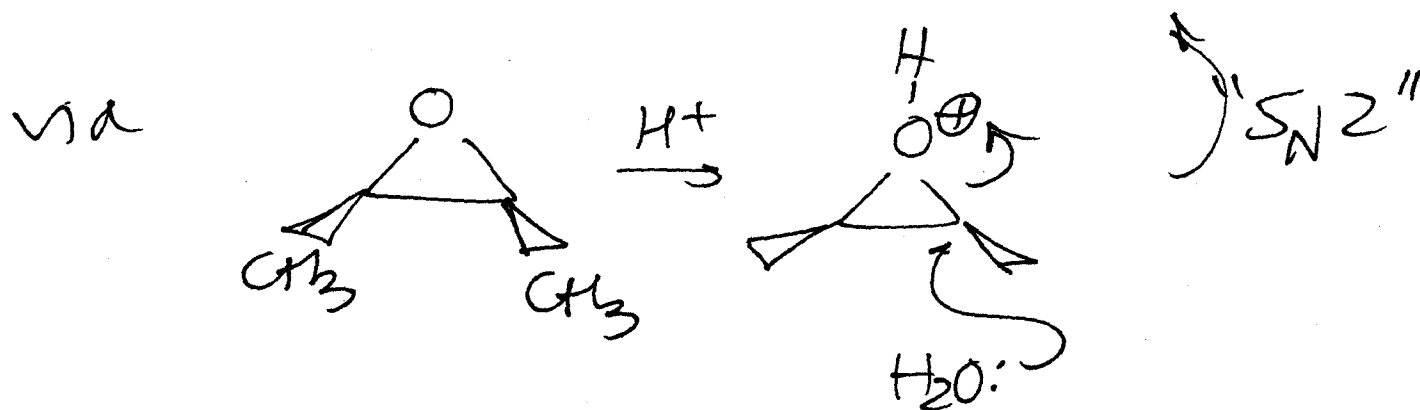
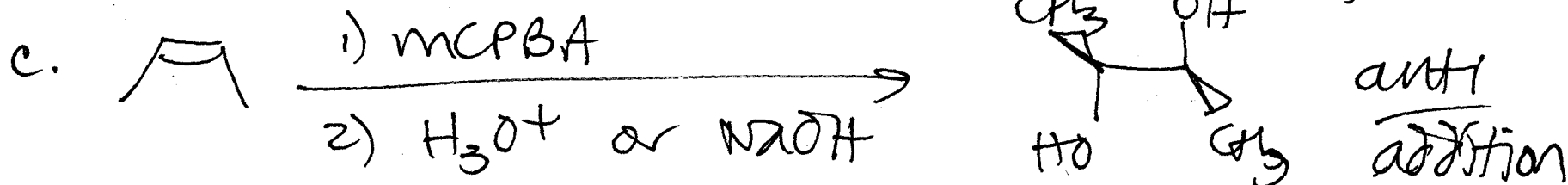
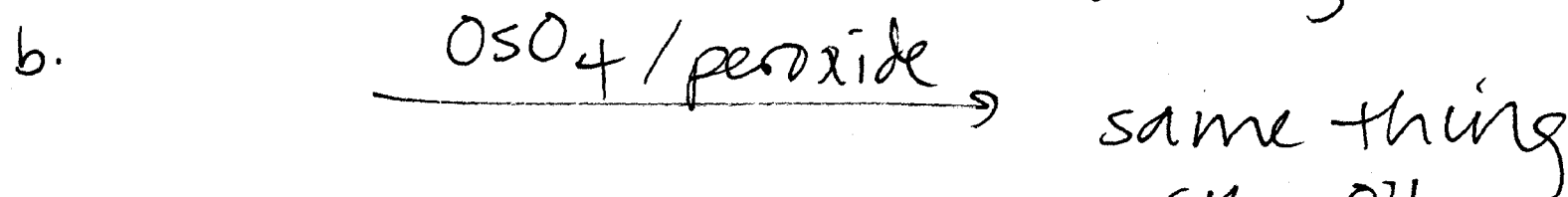
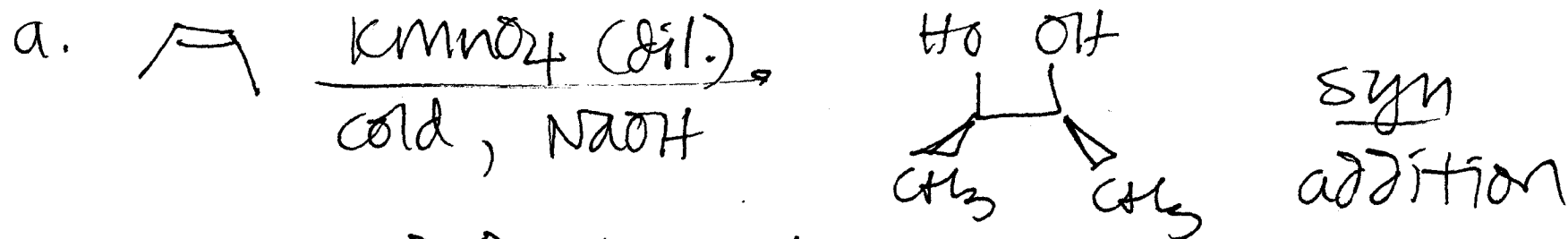
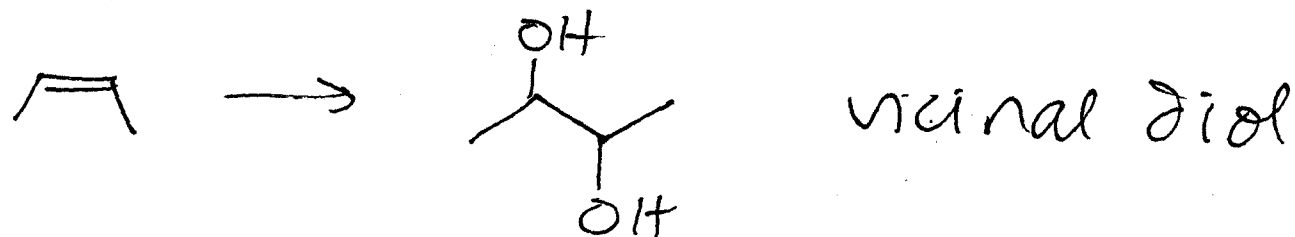


Sharpless epoxidation - enantioselective epoxidation.



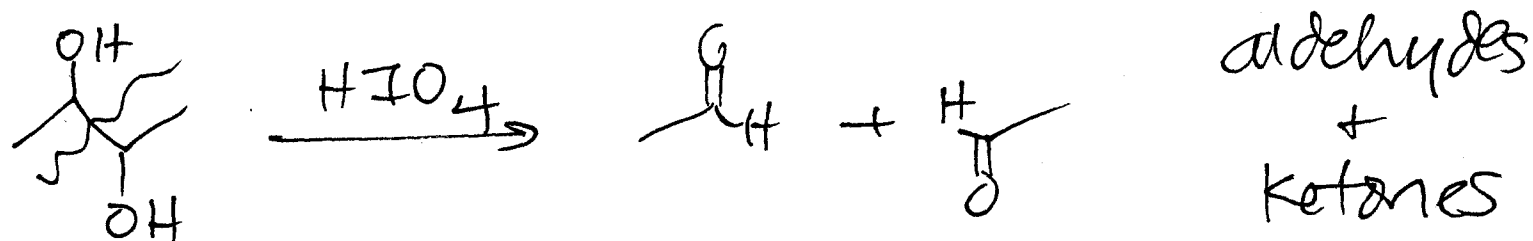
(* won't test on details of this one)

6. Hydroxylation of alkenes

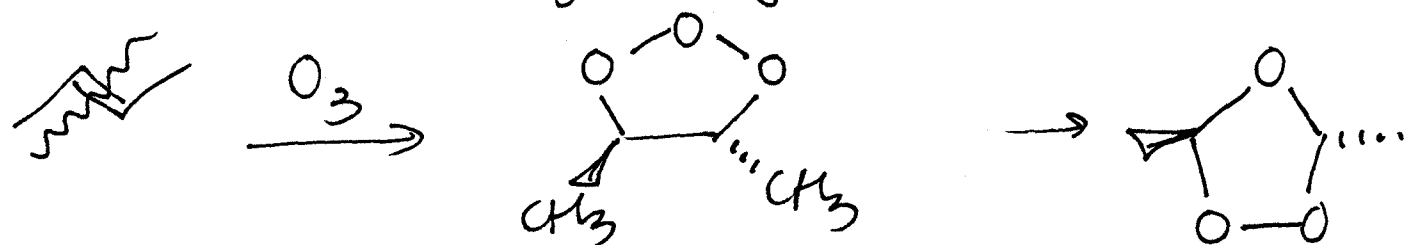


7. Oxidative cleavage

a. of vic. diols

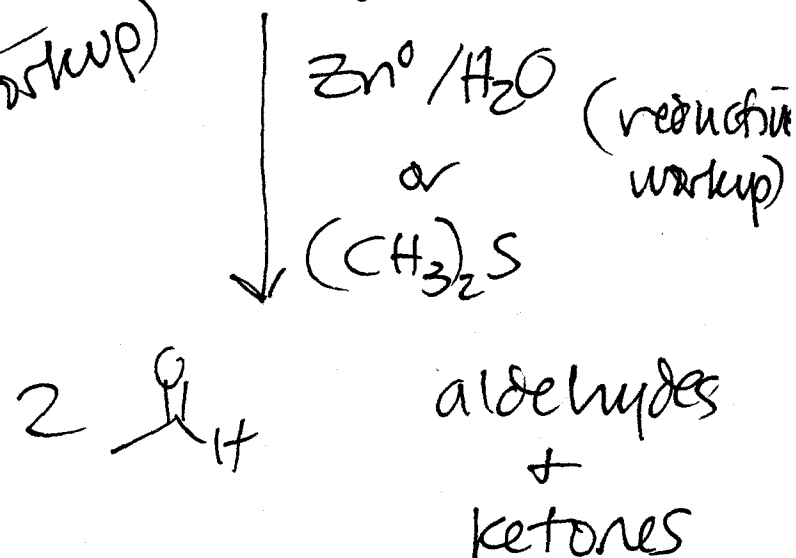
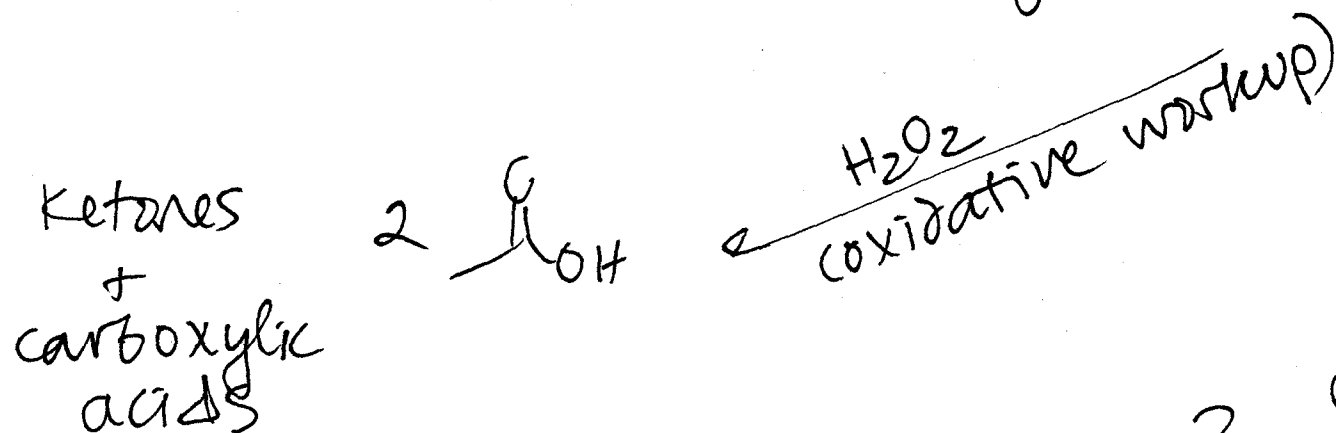


b. of alkenes - ozonolysis

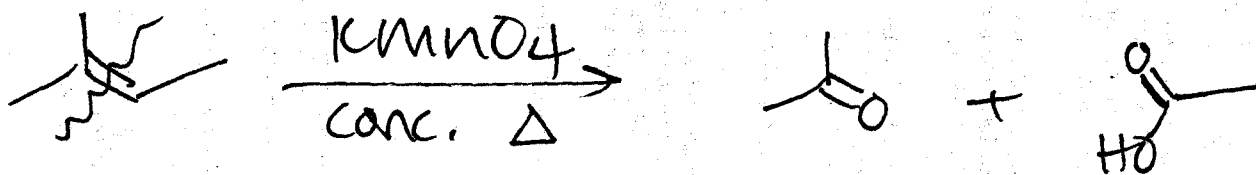


a molozonide

an ozonide

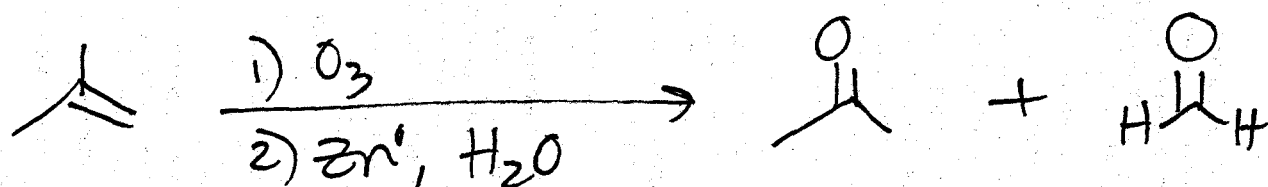


c. of alkenes - KMnO_4 cleavage

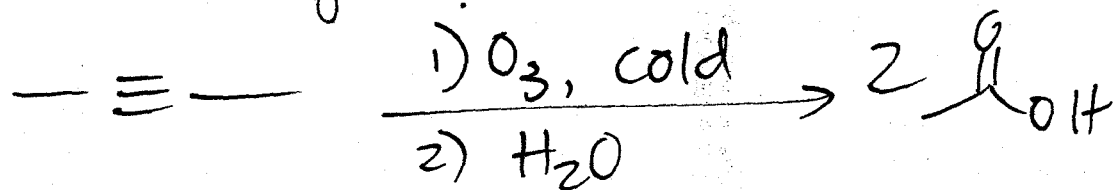


ketones
or
carboxylic
acids

* terminal alkenes:



d. of alkynes



terminal
alkyne $\rightarrow \text{CO}_2$

