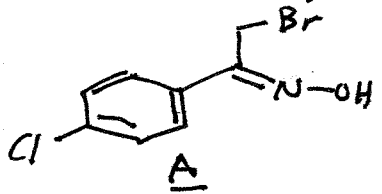


More examples of synthesis problems:

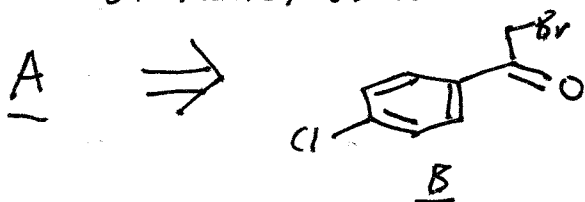
1. On exam 2 you were asked for a synthesis of:



What if you had to start from Benzene?

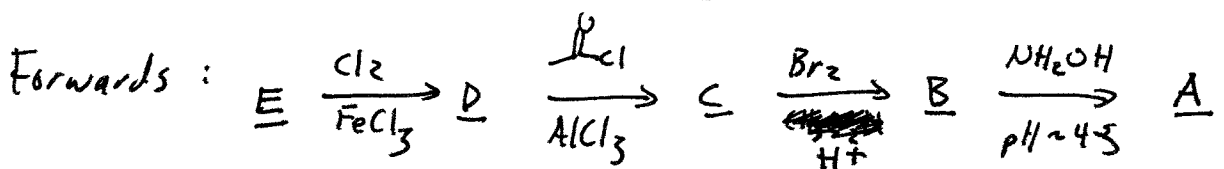
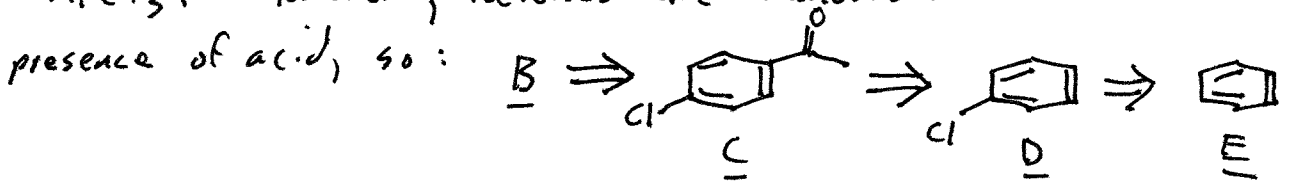
First: note p-substitution. Cl is an *ortho*-director. We didn't learn a way to connect a $\text{C}(\text{NR})_2$ group directly to a ring, so that part was modified after addition to the ring.

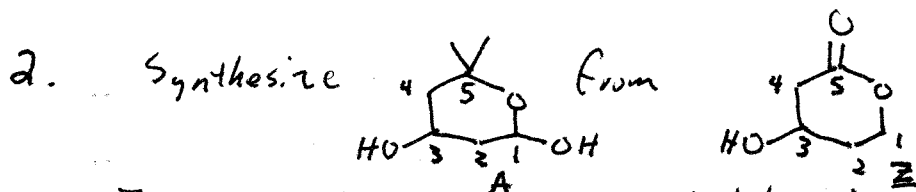
So: what could it have come from? Oximes (a type of imine) come from carbonyls, so:



Note an acyl group ($-\overset{\text{O}}{\parallel}{\text{C}}\text{R}$) is a *meta*-director, so Cl went on first.

But: Friedel-Crafts acylation with $\text{Br}-\overset{\text{O}}{\parallel}{\text{C}}-\text{Cl}$ looks dodgy because of the Br: F-C alkylation-type reactions could also occur in the presence of AlCl_3 . However, ketones are monobrominated in the presence of acid, so:



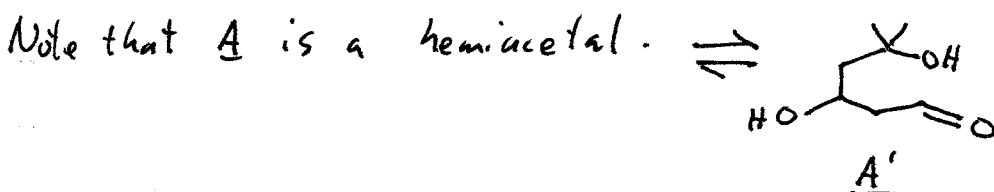


In cases where the carbon skeleton is v. similar, it helps to keep track of the common carbons.

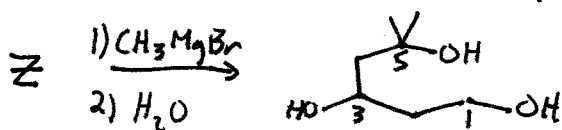
What's different between the two?

- 2 methyl groups at C-5.
 - C-5 goes from an ester to a 3° alcohol
 - C-1 oxidized from $-\text{CH}_2\text{O}$ to $-\text{CH}-\overset{\text{O}}{\parallel}$
- like 1° alcohol to aldehyde.

} Sounds like
add'n of CH_3MgBr !



And note that addition of a Grignard to Z could give B:



If C-1 could be oxidized to an alcohol, you would get A' and thus your product.

However, there's two problems with this idea:

- acidic hydrogen of C3 OH precludes Grignard
- oxidizing C1 and not C3.

Solution: protect C3-OH.

