

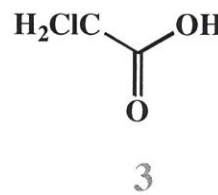
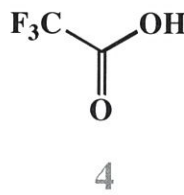
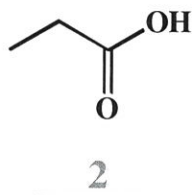
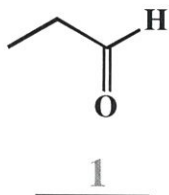
①

Signature C, D, F

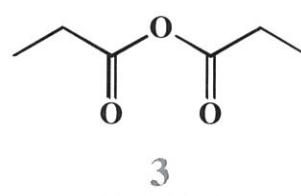
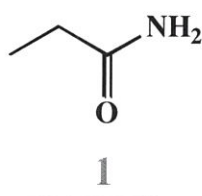
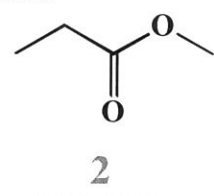
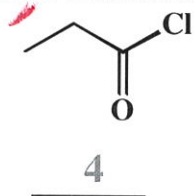
Pg 5 \_\_\_\_\_ (24)

7 (4 pts each) For the following, rank the molecules according to the directions given.

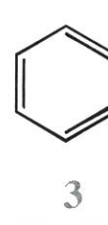
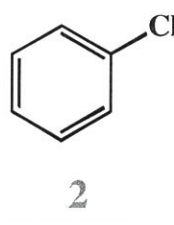
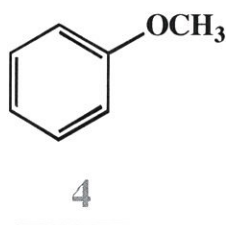
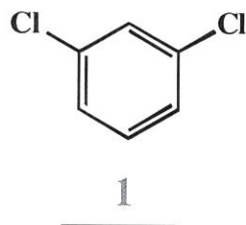
A. Rank from **least to most acidic**, with a 1 under the least acidic and a 4 under the most acidic molecule.



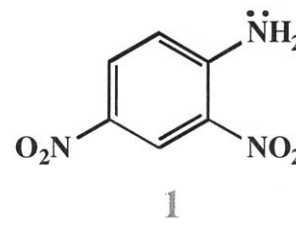
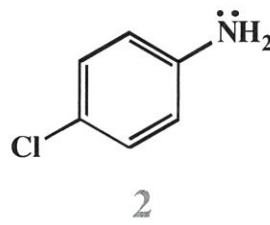
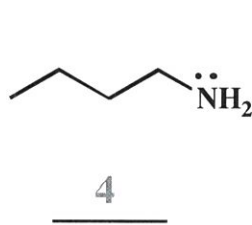
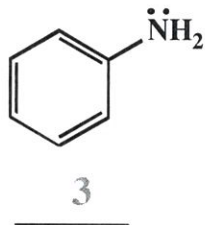
B. Rank from **least to most reactive with nucleophiles**, with a 1 under the least reactive and a 4 under the most reactive molecule.



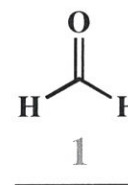
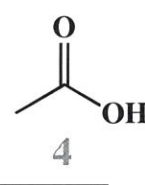
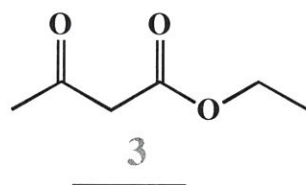
C. Rank from **least to most reactive with wicked strong electrophiles**, with a 1 under the least reactive and a 4 under the most reactive molecule.



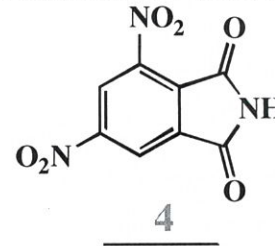
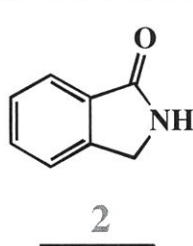
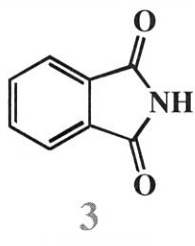
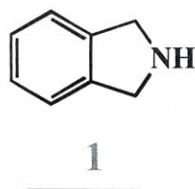
D. Rank from **least to most basic**, with a 1 under the least basic and a 4 under the most basic molecule.



E. Rank from **least to most acidic**, with a 1 under the least acidic and a 4 under the most acidic molecule.



F. Think this through!! Rank from **least to most acidic**, with a 1 under the least acidic and a 4 under the most acidic molecule.

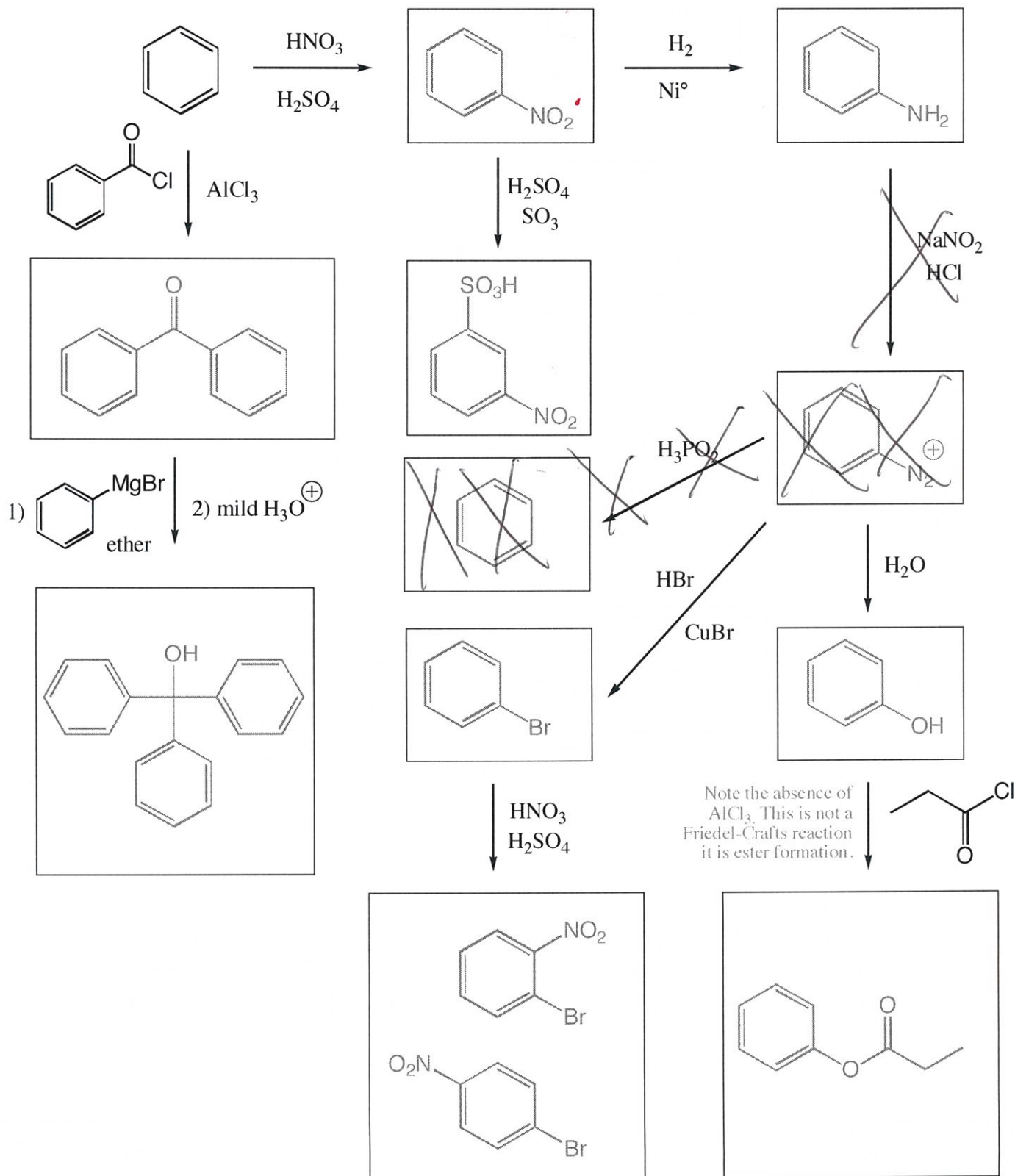


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Signature \_\_\_\_\_

Pg 10 \_\_\_\_\_ (34)

12. (34 pts.) Write the predominant product or products that will occur for each transformation. Assume each reagent only adds once to the ring. If predominantly ortho/para products are predicted, you must draw both.

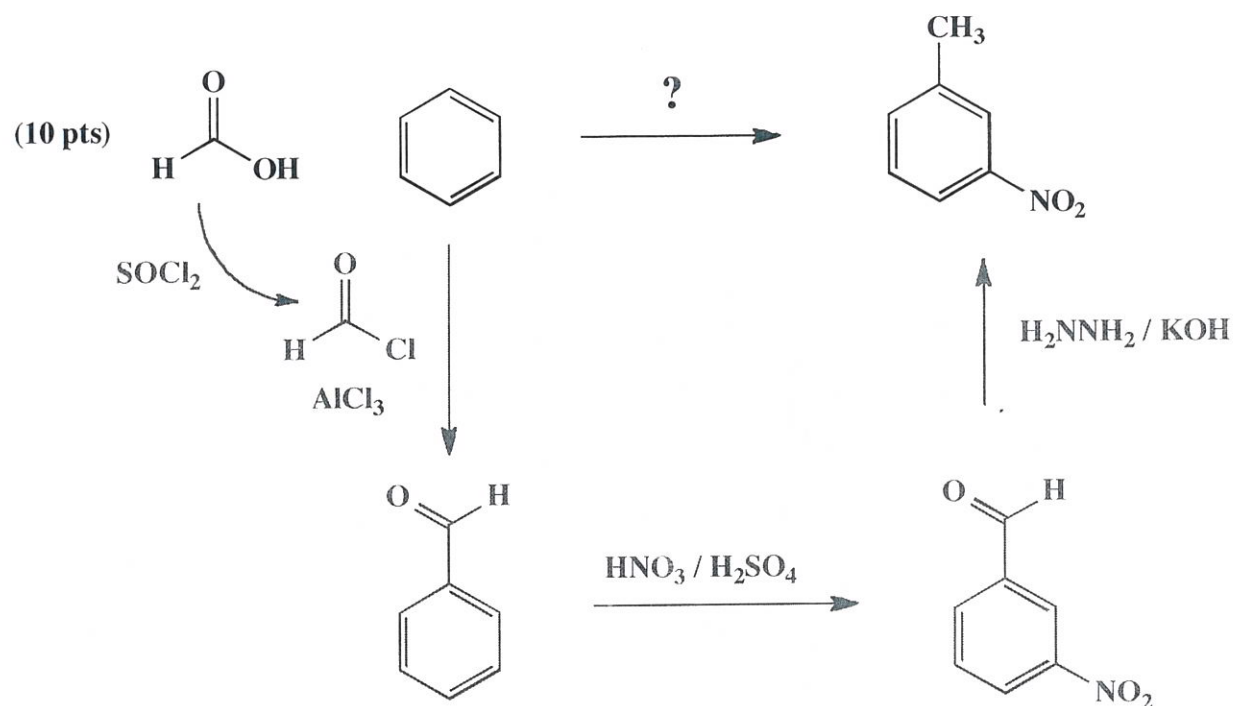
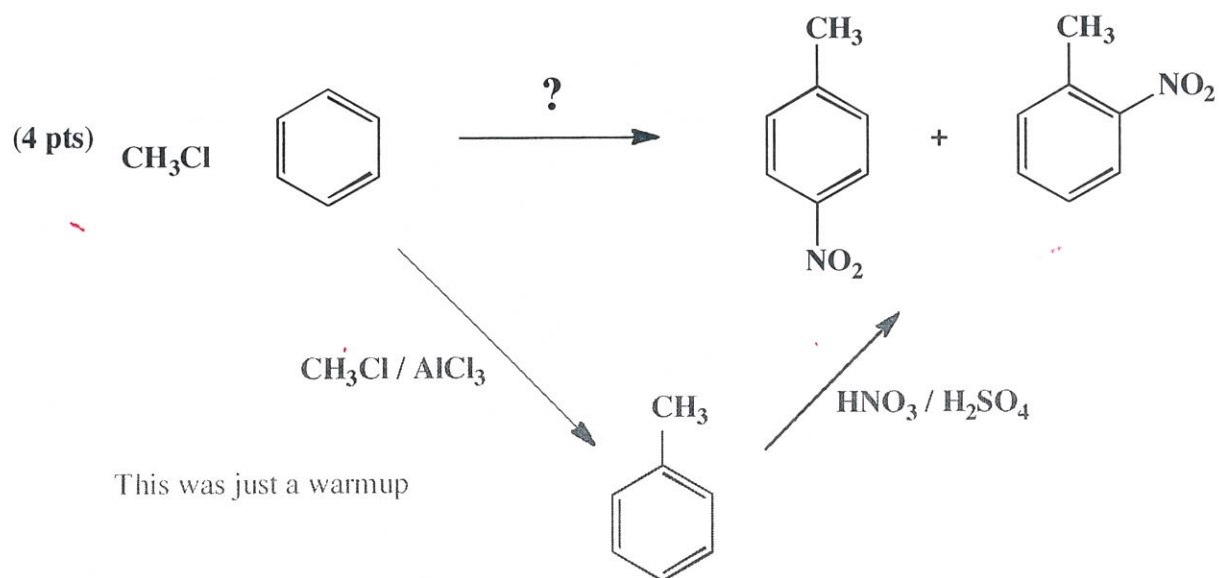


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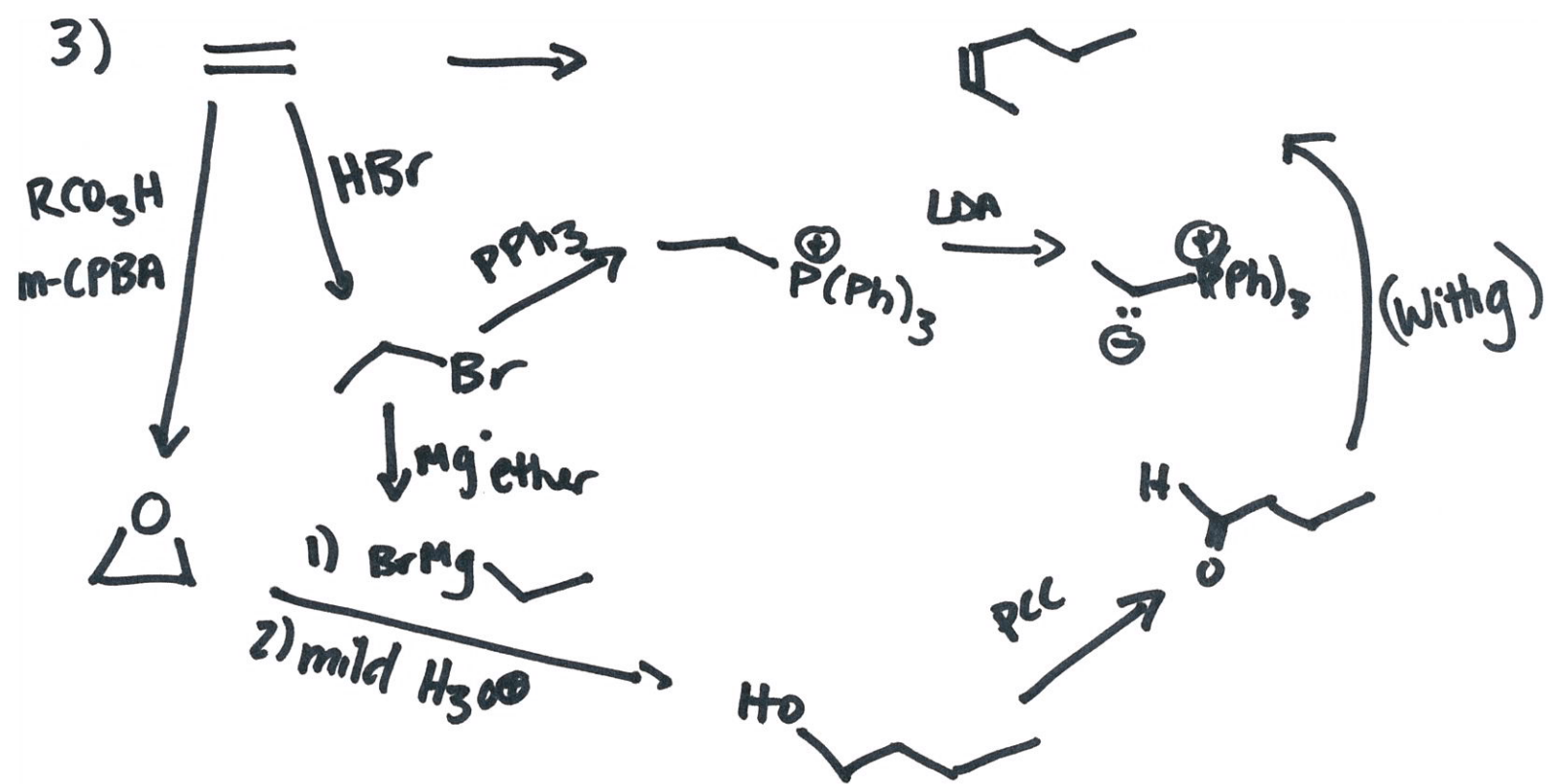
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Pg 14 \_\_\_\_\_ (14)

17. Using any reagents turn the starting material into the indicated product. All the carbons in the product must come from the given starting materials. Draw all molecules synthesized along the way. When it doubt, draw the molecule!



**Recognize** that this one is harder than it looks because the Friedel-Crafts reaction will not work on a ring with a bad group like the nitro group on it. Therefore, the methyl group has to be made using a Wolff-Kishner or Clemmensen reduction following nitration.



→ 2 alkene : Wittig!

→ one combo of aldehyde + Wittig reagent shown (ethyl Wittig + butanal) - could have made (butyl Wittig + acetal).

→ make ethyl Wittig from bromoethane (starting material + HBr)

→ make butanal from oxidation of 1-butanol, formed from ethyl Grignard + epoxide.

4)

