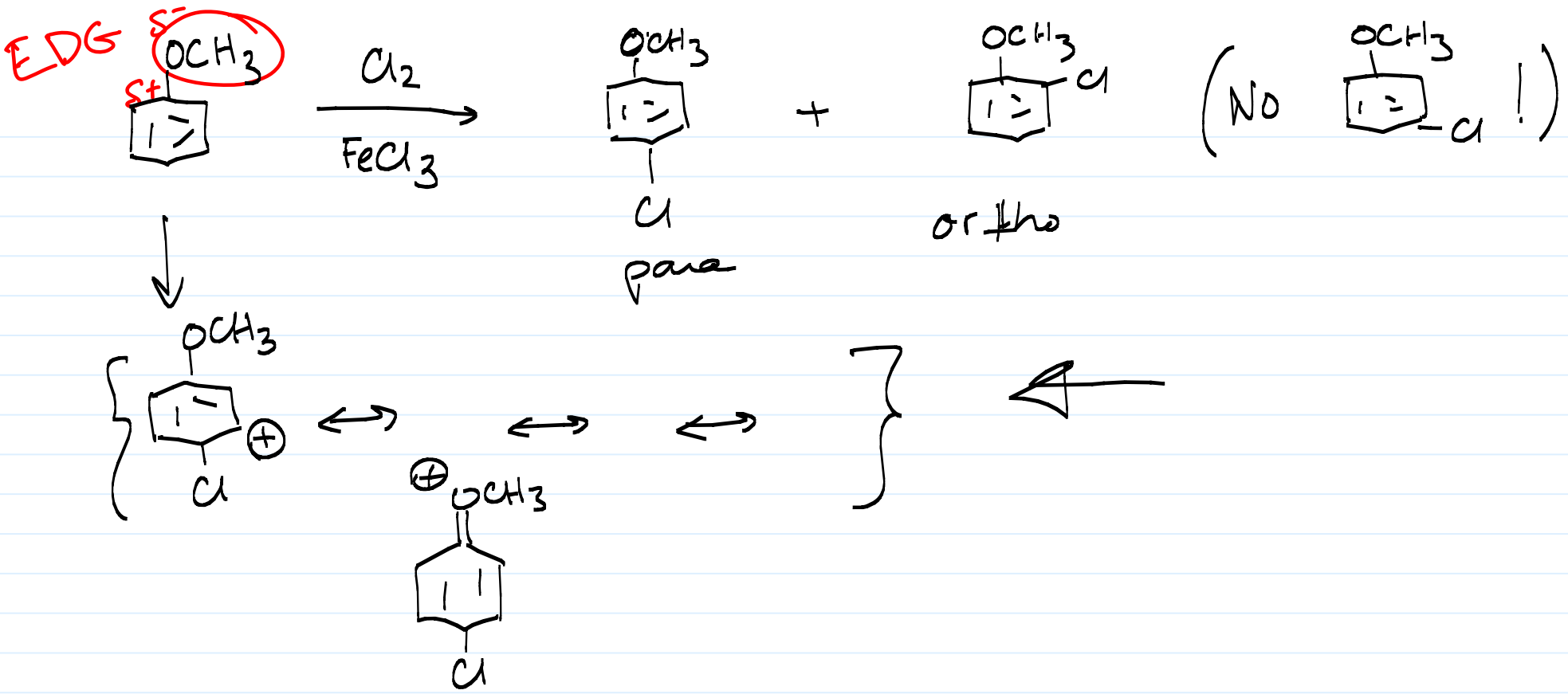
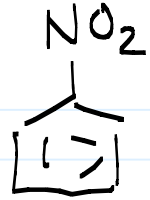
Aromatic Substitution

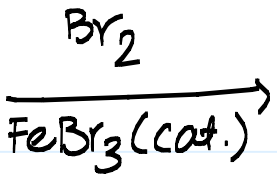
Note Title 3/4/2014

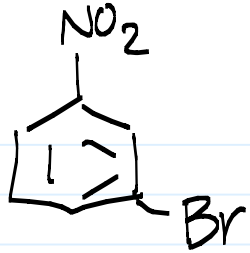
Announcements: * Midterm 1 on Saturday *

- Review Session: Thurs 6-8 pm
- Watch your email for announcements regarding the review session
- Other discussion sections (TONIGHT): Practicing Electrophilic Aromatic Substitution

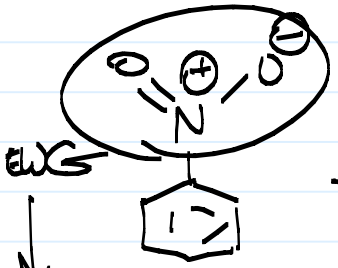

EDG
OCH_3
Cl_2
$FeCl_3$
para
ortho
(NO !)

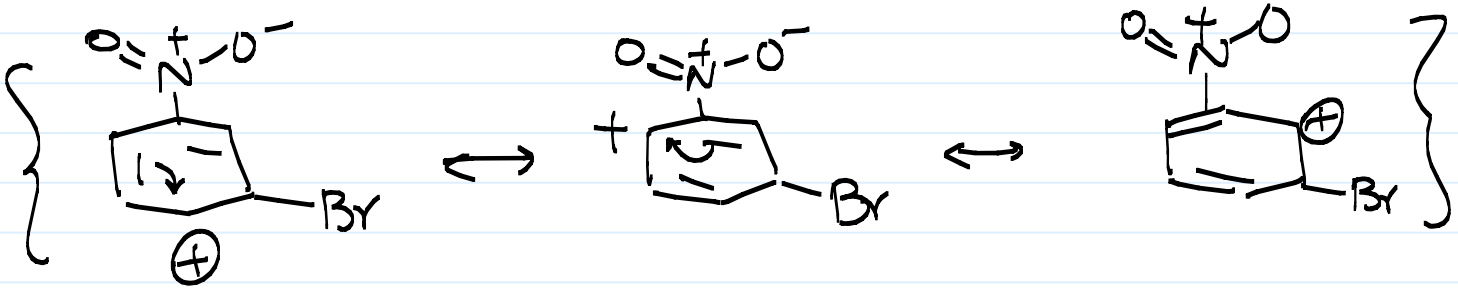






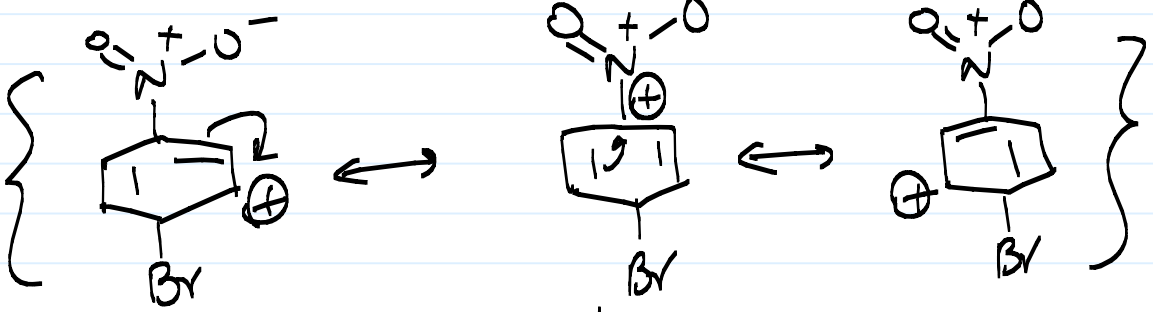
* meta only!
* very slow compared to benzene.





deactivating group

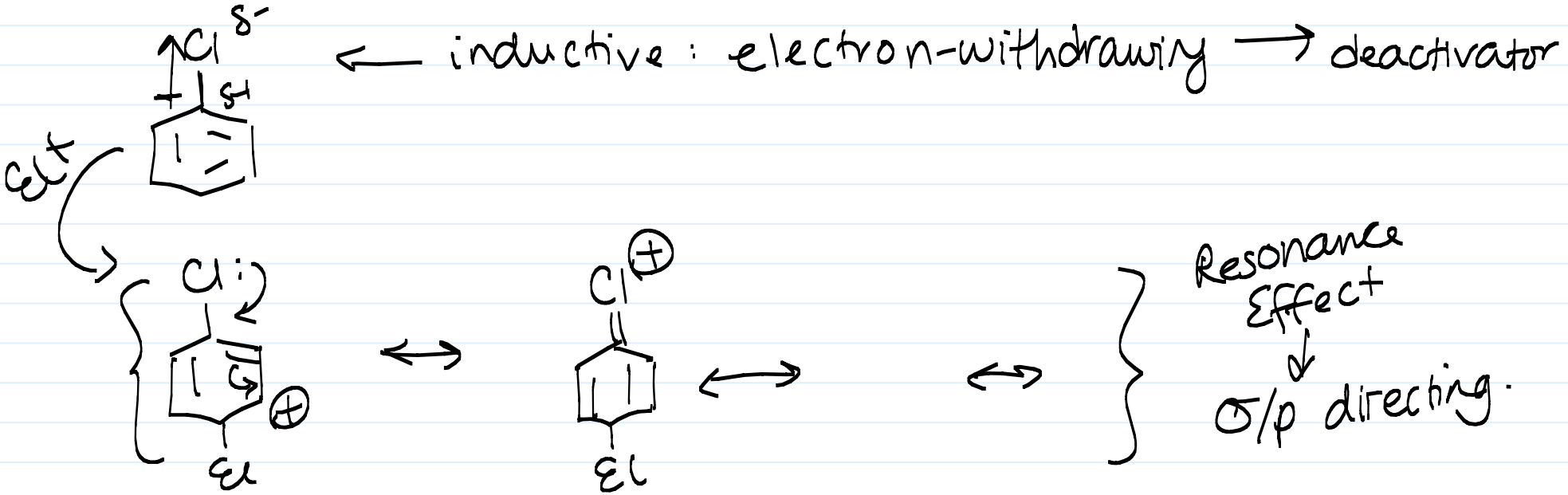
Pulling e-s out of your nucleophile.



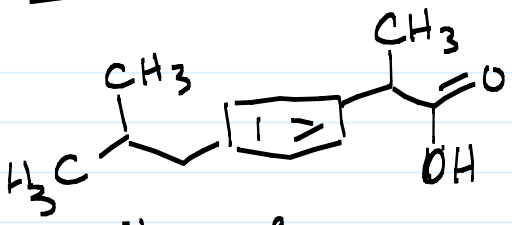
bad resonance structure

See Handout: o/p director = activating group (except halide)

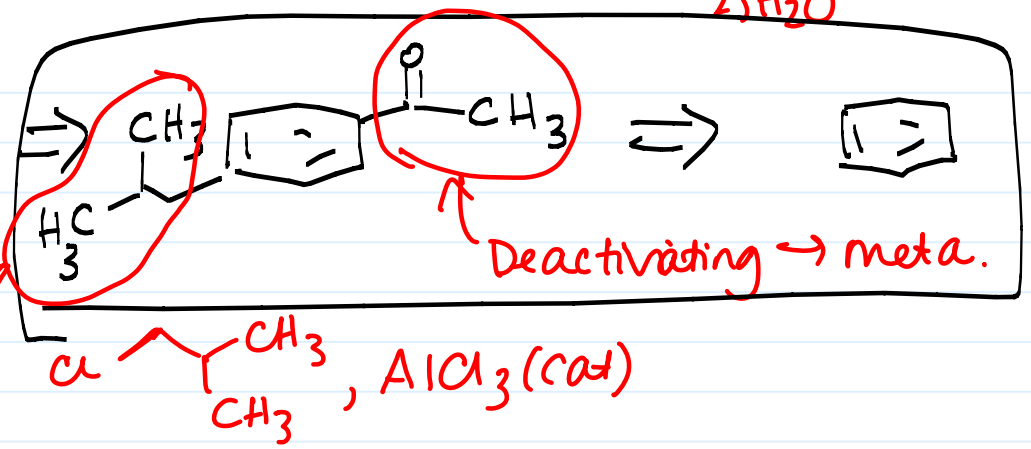
m director = deacting group

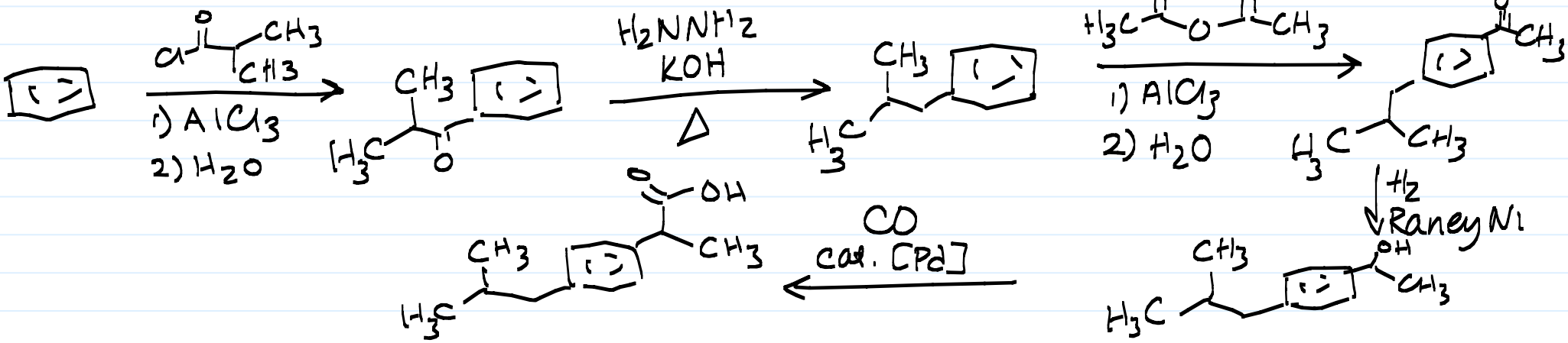


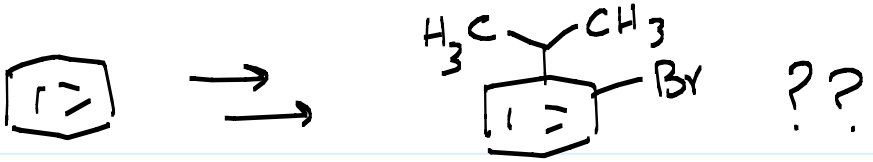
Ibuprofen: (Almost)



ibuprofen







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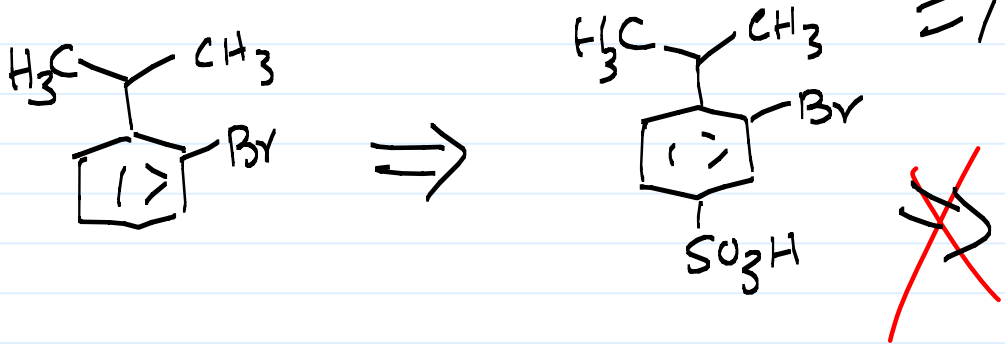
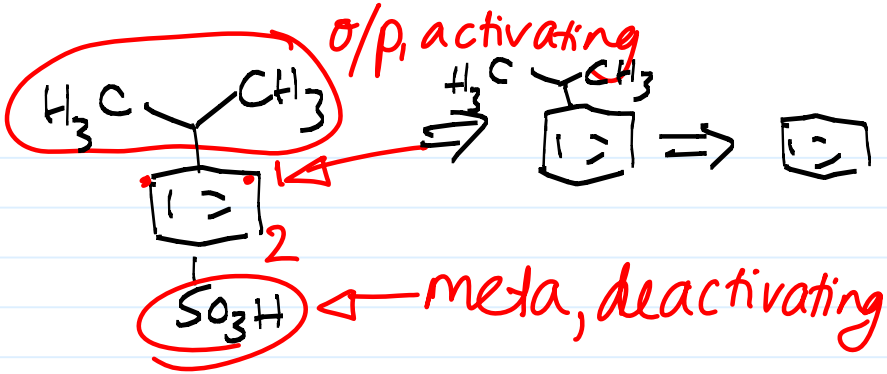
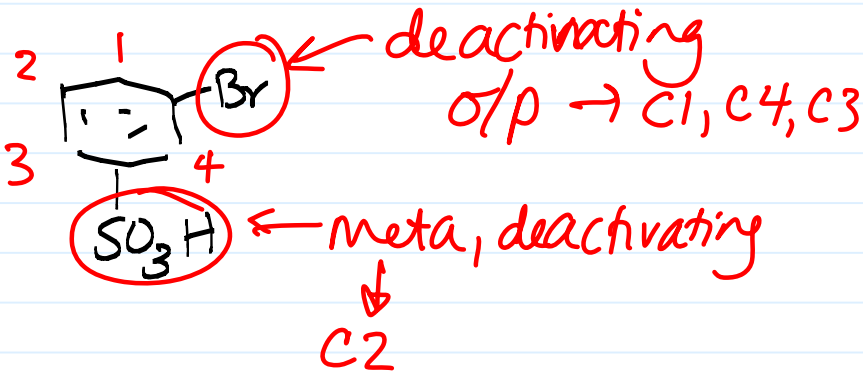
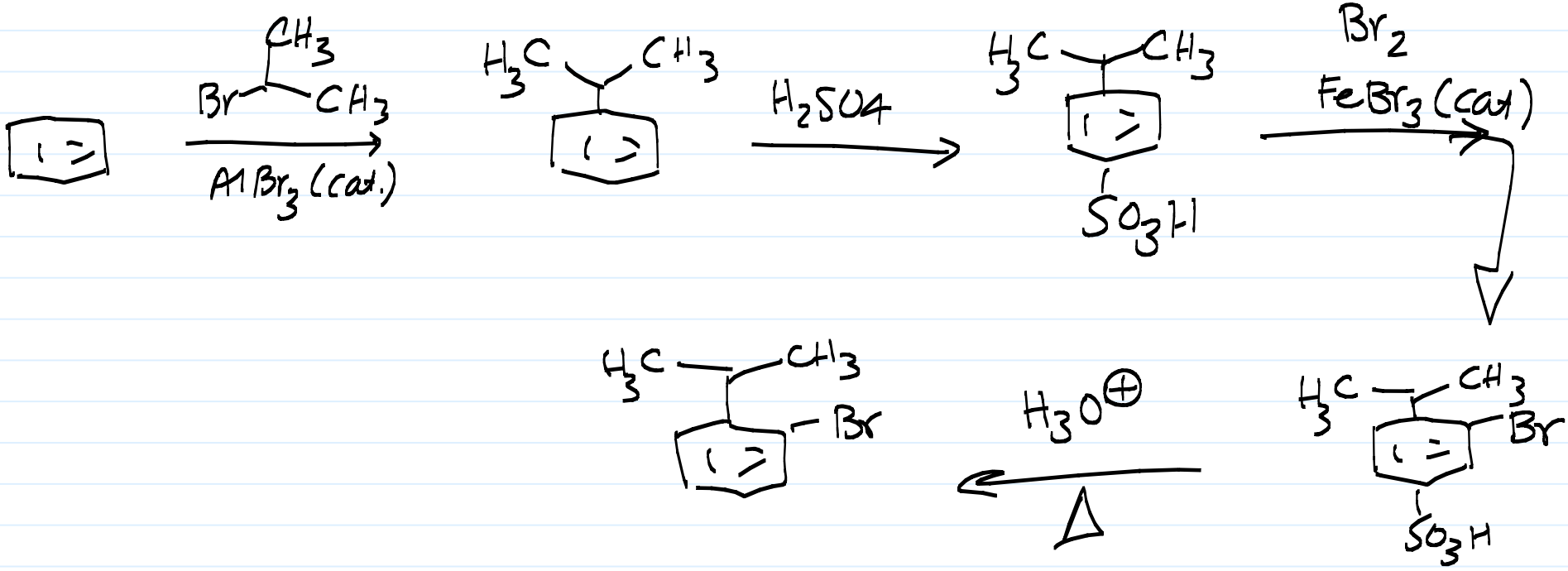
Protect para-position:







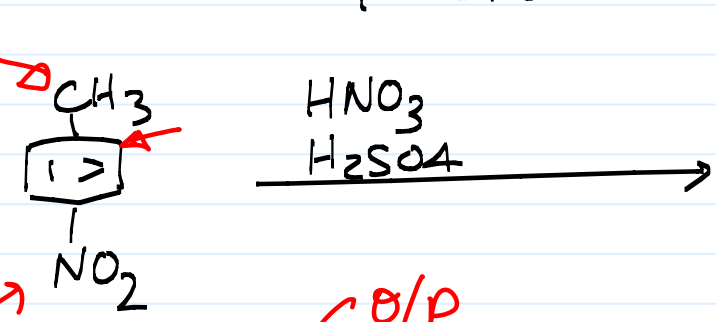
Forward Direction:

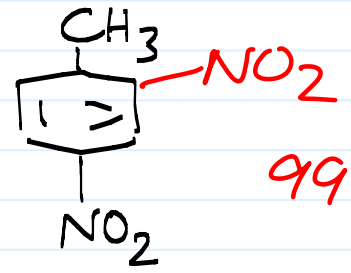


Polysubstitution: Where will substitution occur?

→ Steric & Electronic effects both matter.

ex:

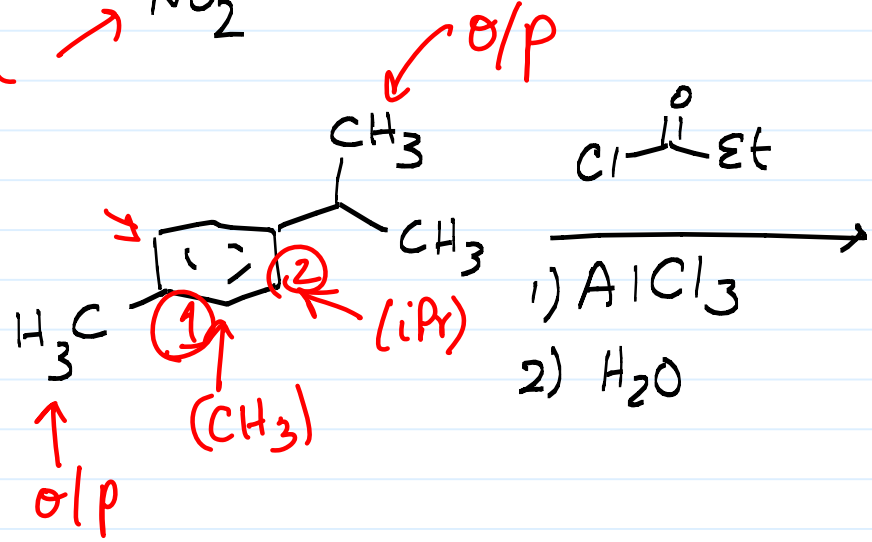


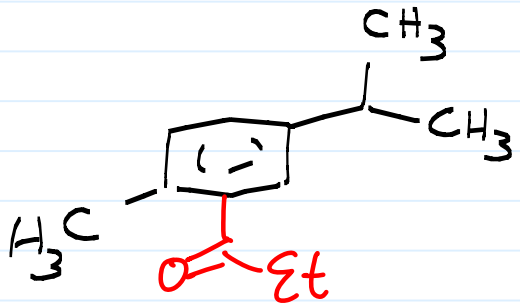


99%.

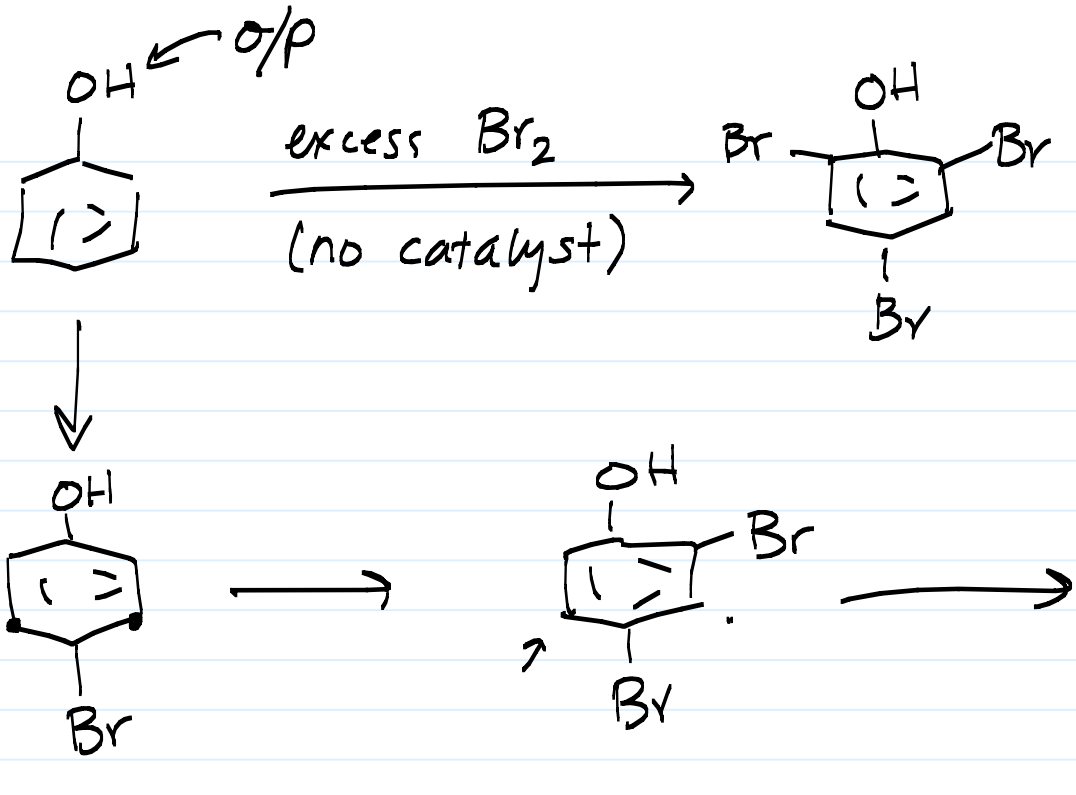
Electronics dominate. (& cooperating)

ex:





Sterics dominate.


o/p
OH
excess Br_2
(no catalyst)
OH
Br
Br
Br
OH
Br
OH
Br
Br
OH
Br
Br
Br