

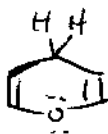
Answer key #3 CH 16 & 17

1) (a)



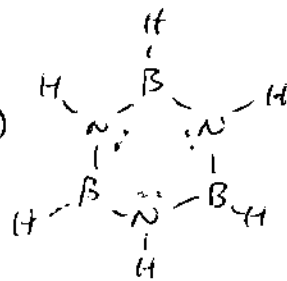
aromatic
one lone pair from oxygen is in resonance w/ conjugated double bonds
 $4n+2 = 6, n=1$

(b)

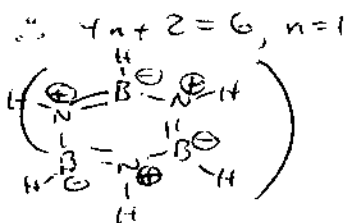


not aromatic
there are 6e⁻ w/ in ring (incl one lone pair from oxygen) but all atoms w/ in ring do not have π centers

(c)



Aromatic, 3 lone pair e⁻ from N's can be delocalized onto each Boron (trivalent, Lewis acid, can accept an e⁻ pair)

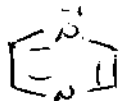


(d)



Aromatic, 6 πe^-
 $4n+2, n=1$

(e)



Aromatic, 6 πe^-
 $4n+2, n=1$

(f)



aromatic
(one pair from N-H group participates in π -system) $4n+2 = 6, n=1$

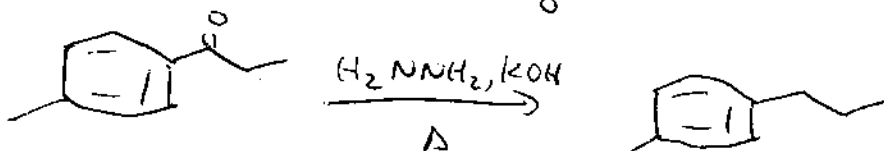
2) (a)



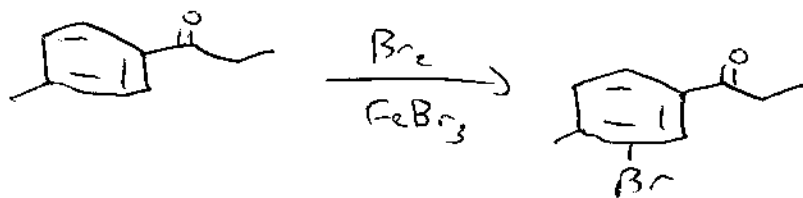
(b)

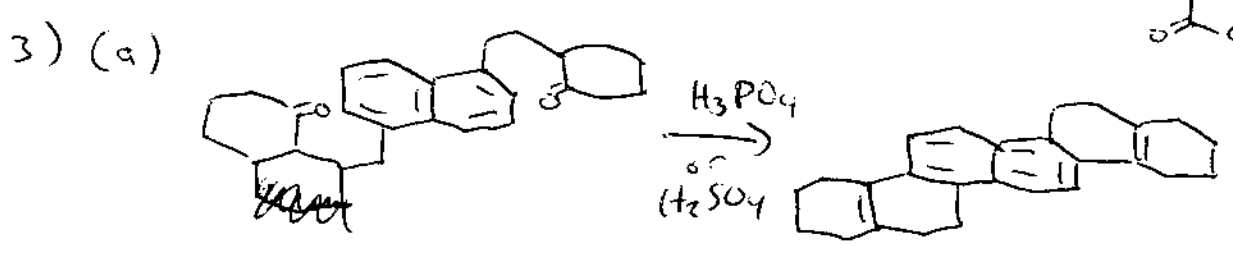
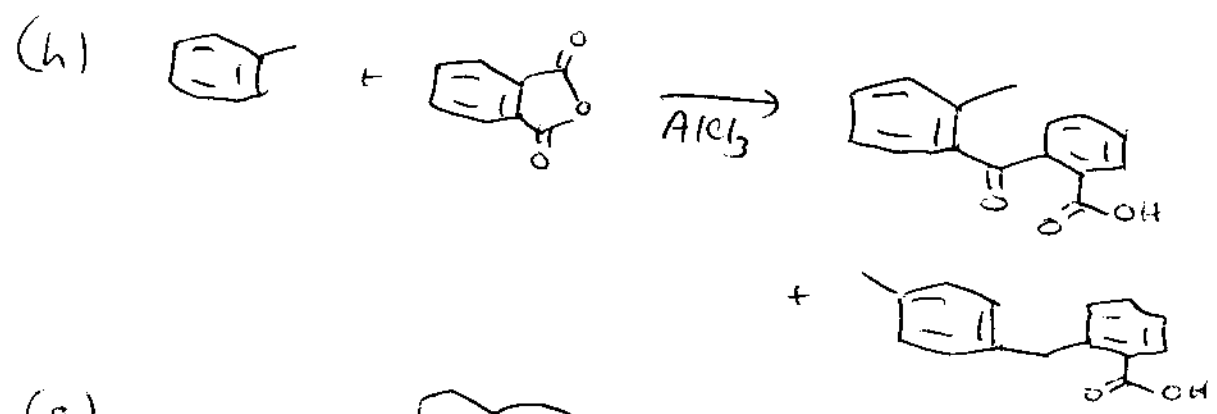
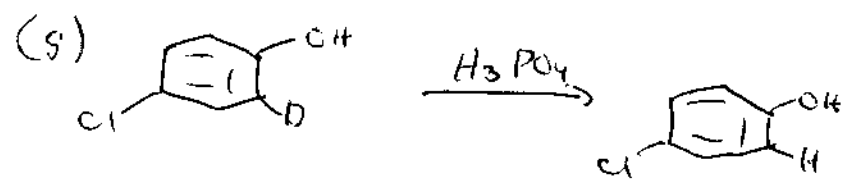
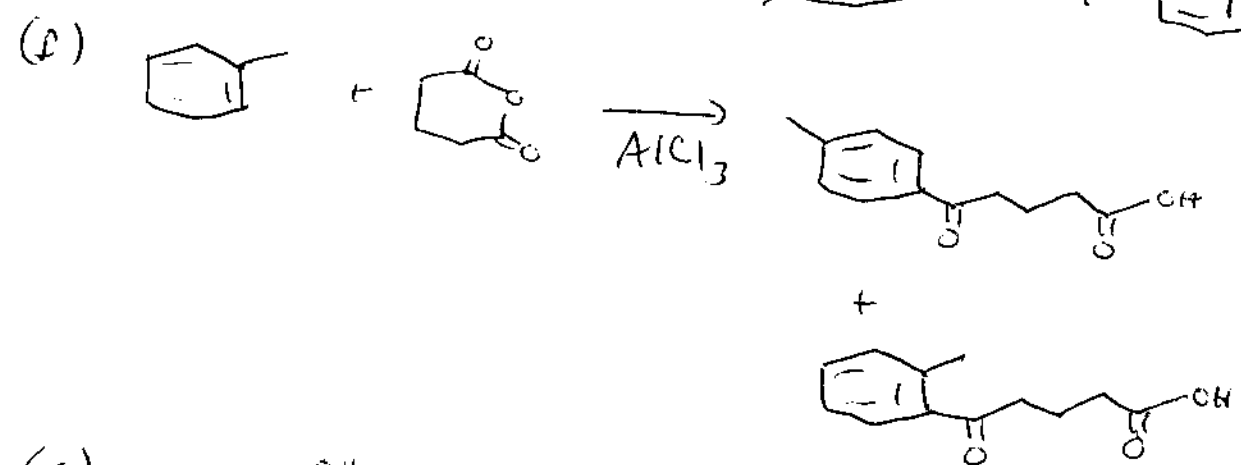


(c)

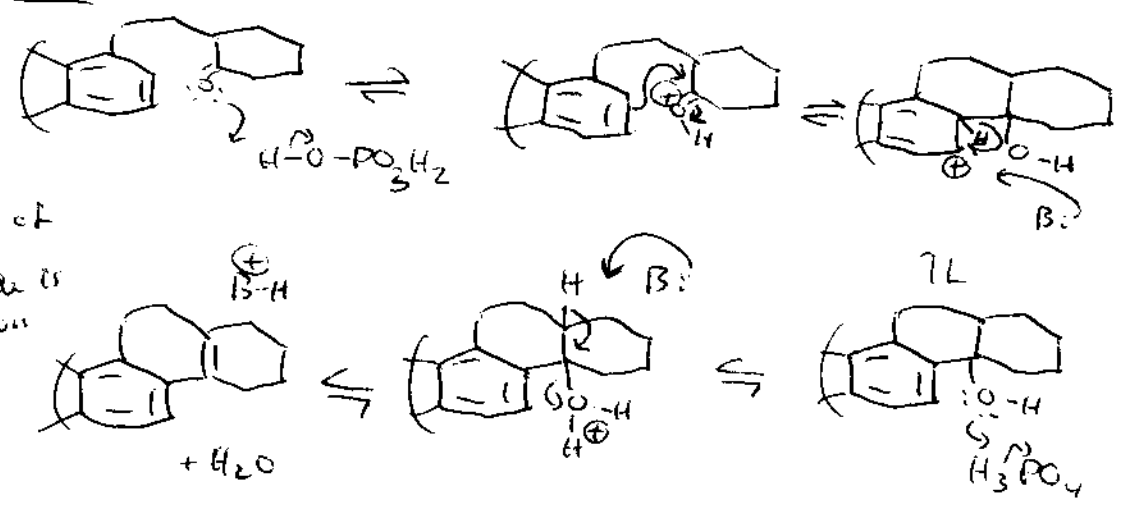


(d)



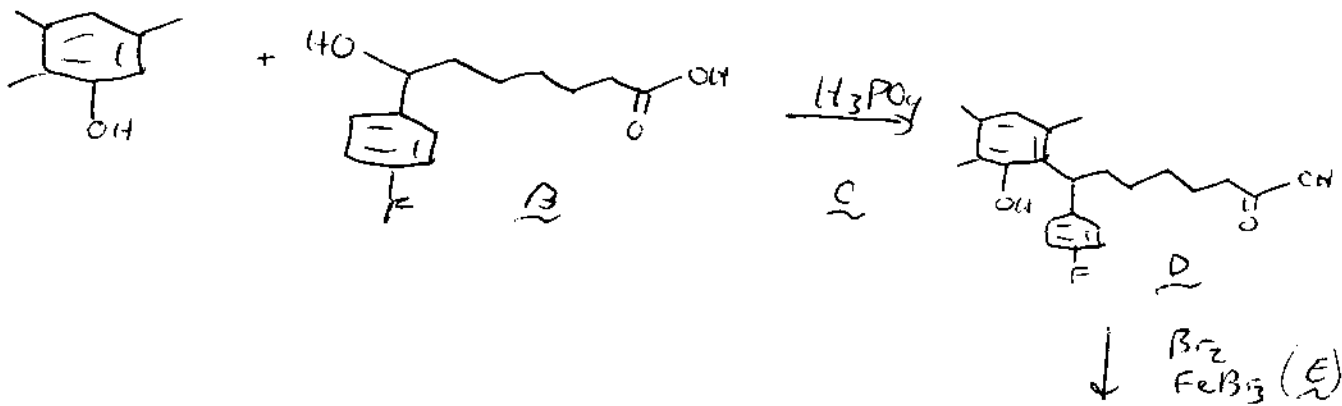


Mech



NOTE:
only 1/2 of molecule is shown

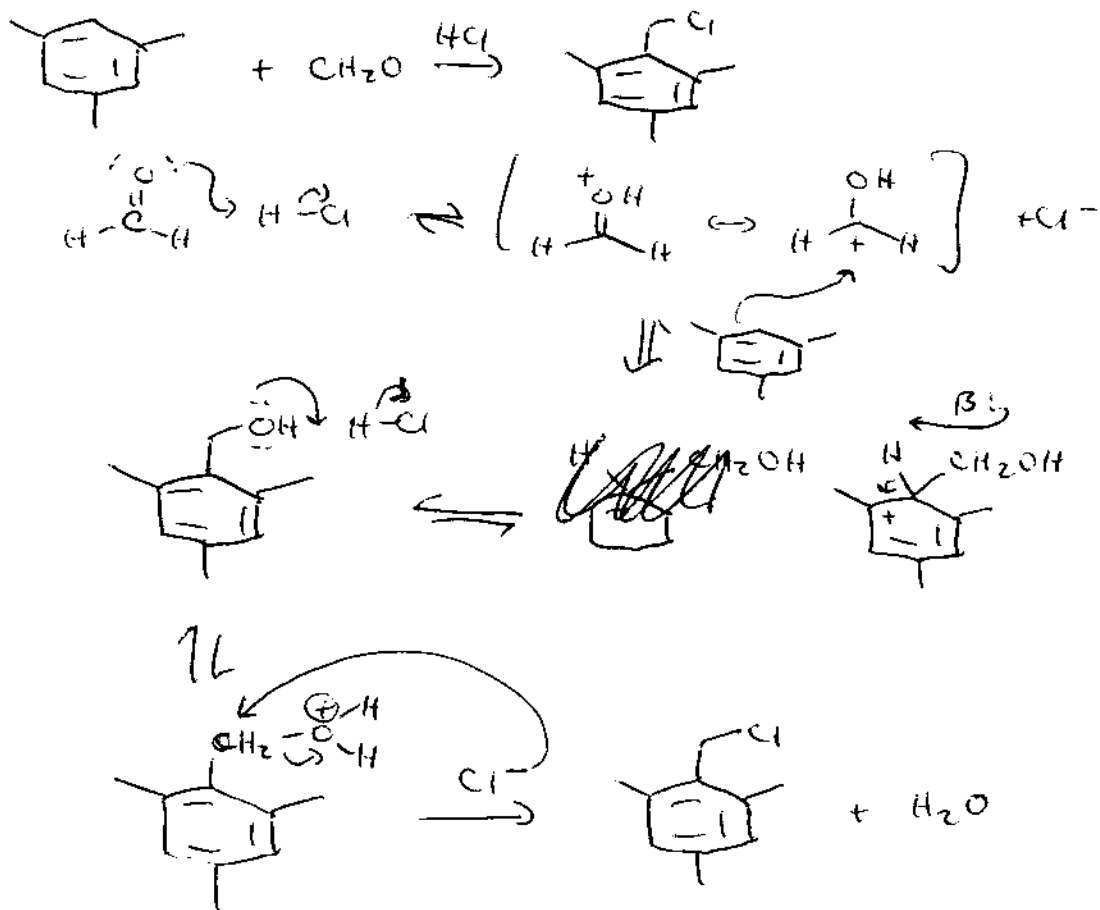
3) (b)



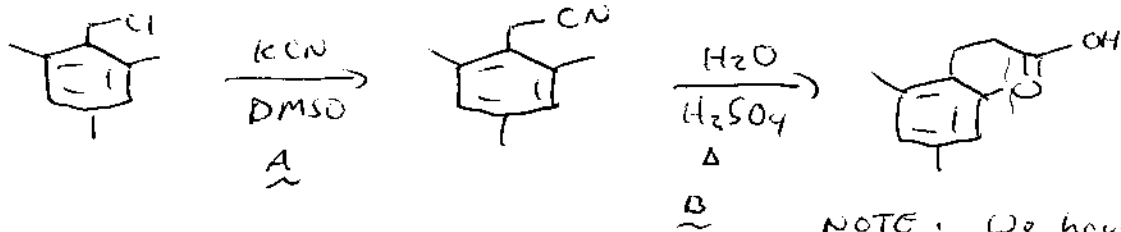
NOTE: 1st step involves formation of a stable benzylic cation. Attack here occurs from the least hindered and activated ring carbon on the cation.

In step 2, the bromination occurs at the activated ring and NOT the de-activated/fluorinated ring.

4) Mech pt A:

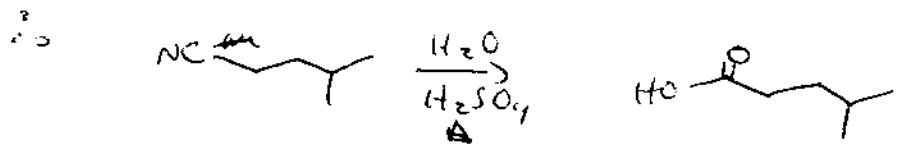
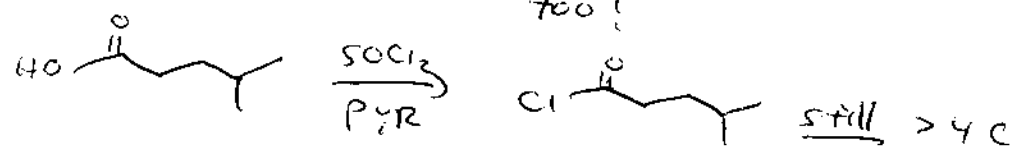
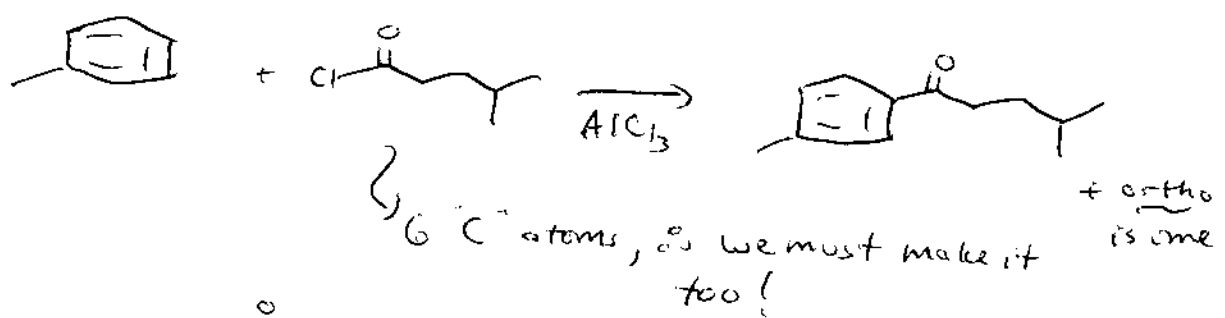
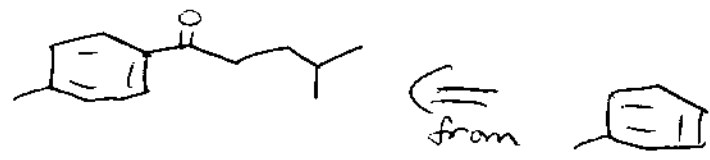


4) contd

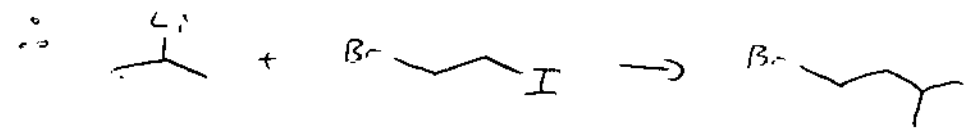
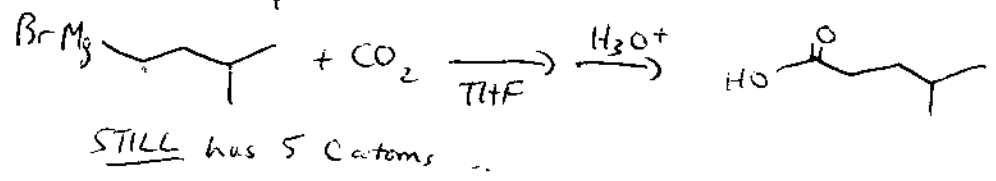


NOTE: We have not done the 2nd step of this rxn (reagent B), but it is VERY similar to the Rxn of R-C≡C-R' w/ H₂O/H₂SO₄ ...

5) (a)



and ~~from~~ OR



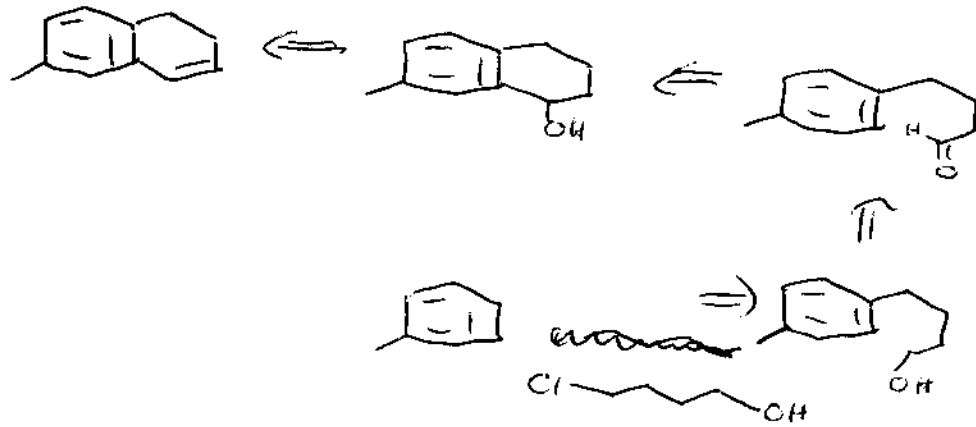
5) (b)



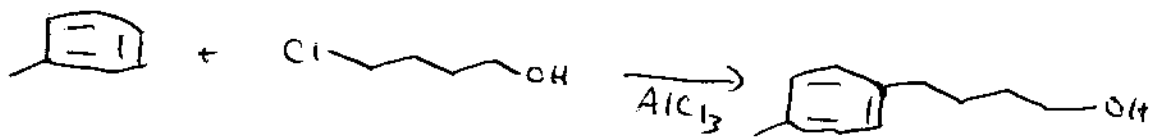
NOTE: There are SEVERAL

different ways to
make this molecule;
I have just shown one!

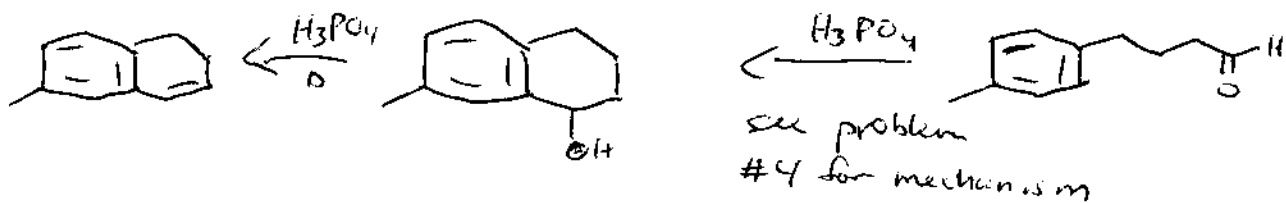
Working backwards...



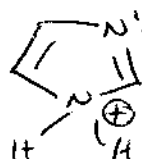
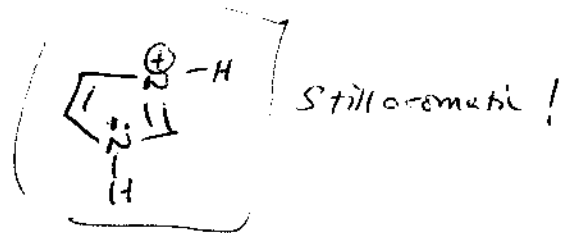
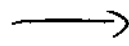
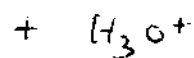
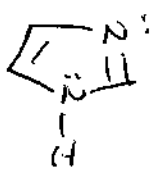
Now, going in forward direction, and adding reagents...



\downarrow CrO_3, HCl
 $\text{Pyr.}, \text{CH}_2\text{Cl}_2$



6)



no longer is
aromatic!

Recall, the lone pair on
the protonated N is used
for aromatic ring!