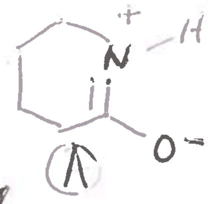
MAD ORG. CHEM "MIN." #: 26A

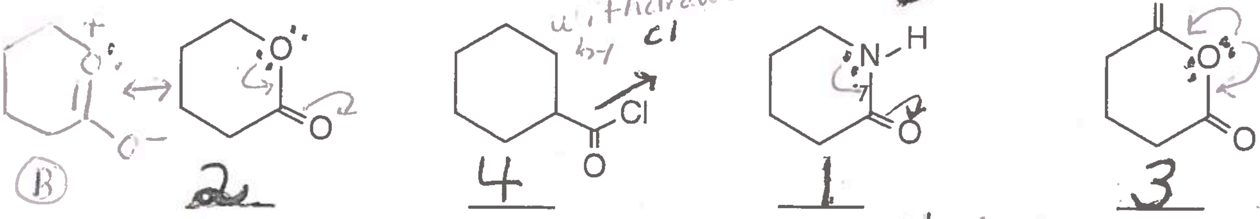
LAST NAME______________ FIRST NAME______________

ID#______________ Circle SECTION: M/W or T/Th



because (A) plays a bigger part in amide hybride than (B) plays in ester hybride ((+) N more stable than (+) O)

1. Place the following compounds in order of increasing reaction rate with methanol (1=least reactive, 4=most reactive):



(B) 2 — 4 — 1 — 3

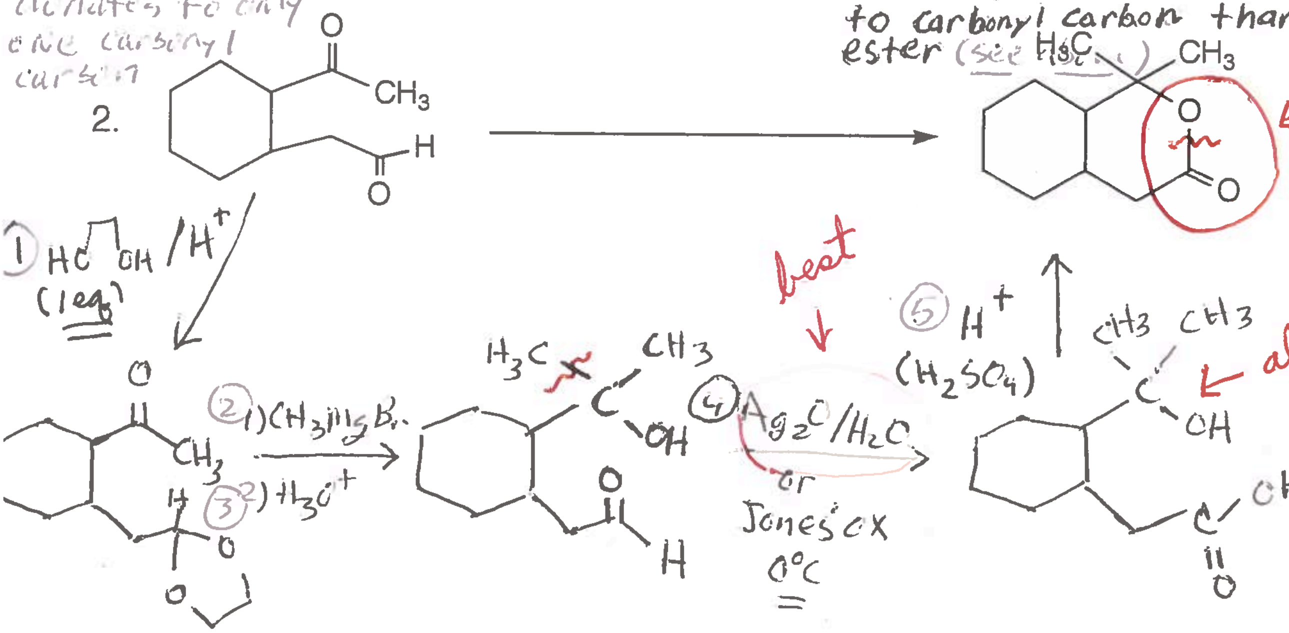
ester more stable than anhydride
- less (+) carbonyl carbon → oxygen donates to only one carbonyl carbon

inductive withdrawal by Cl
- least stable
- most (+) carbonyl carbon
- most reactive

- amide is most stable
- least (+) carbonyl carbon → nitrogen can donate more e- density to carbonyl carbon than oxygen in ester (see ...)

- resonance donation of oxygen shared by two carbonyl carbons
- each is more (+) than carbonyl carbon of ester

2.



① $HO \frown OH$ / H^+ (1eq)

② 1) CH_3MgBr ③ 2) H_3O^+

④ Ag_2O/H_2O heat, or Jones' ox 0°C

⑤ H^+ (H_2SO_4)

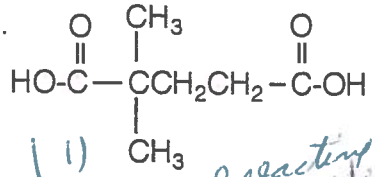
← ester ↑ acid + alcohol

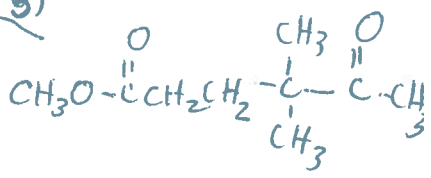
← alcohol

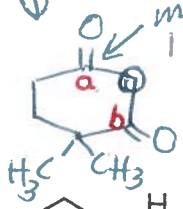
← carboxylic acid

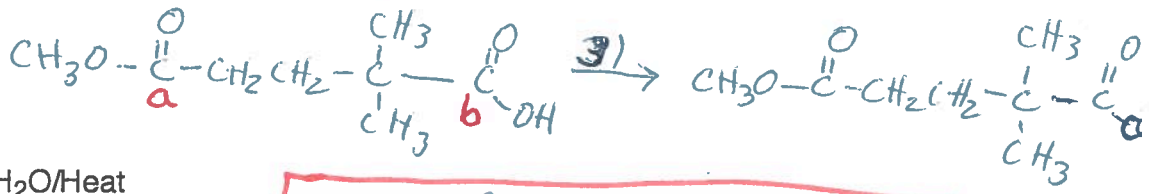
MAD ORG. CHEM "MIN." #26B

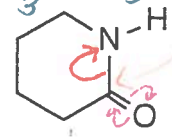
1. Heat
2. CH_3OH
3. $SOCl_2$
4. $(CH_3)_2CuLi$ ← doesn't react with ester
5. $(C_6H_5)_3P{=}C(CH_3)_2$

1. 

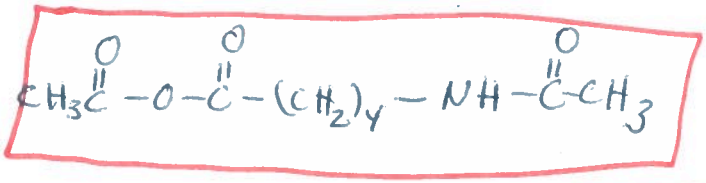


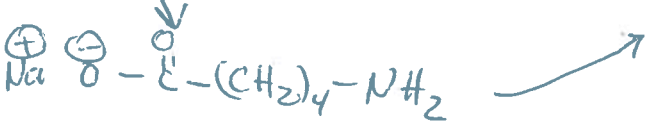


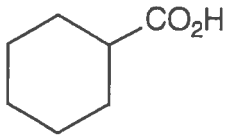


2. 

1. $NaOH/H_2O$/Heat
2. $CH_3-C(=O)-Cl$ (xs)

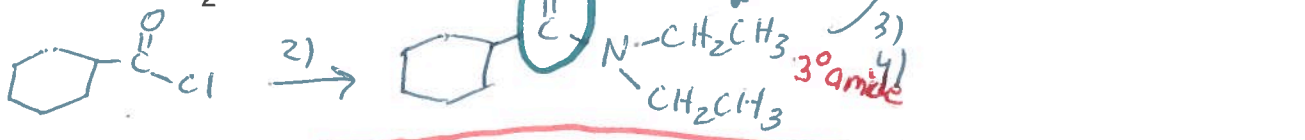


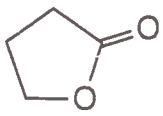


3. 

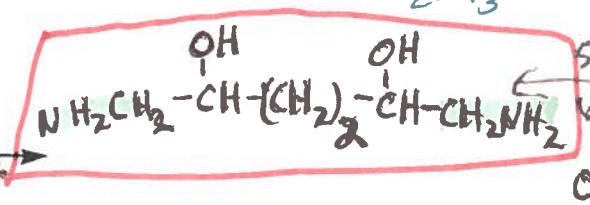
1. $SOCl_2$
2. $(CH_3CH_2)_2NH$ 2° amine
3. $LiAlH_4$
4. H_2O

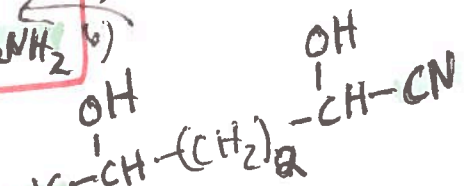
ONLY works with amide! NOT ester, acid or anhydride

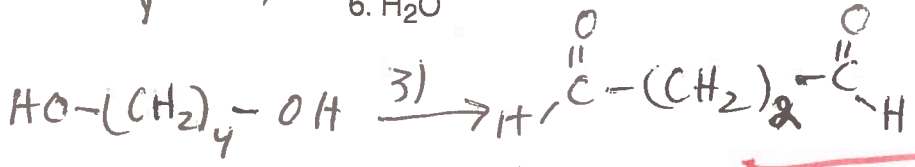


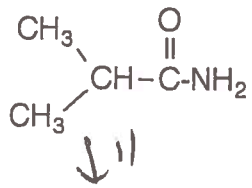
4. 

1. $LiAlH_4$
2. H_3O^+
3. PCC
4. $NaCN/H^+$
5. $LiAlH_4$
6. H_2O







5. 

1. $POCl_3$
2. H_3O^+/heat
3. B_2H_6/diglyme
4. PBr_3
5. Mg/ether
6. $CH_3C(=O)-Cl$
7. H_3O^+