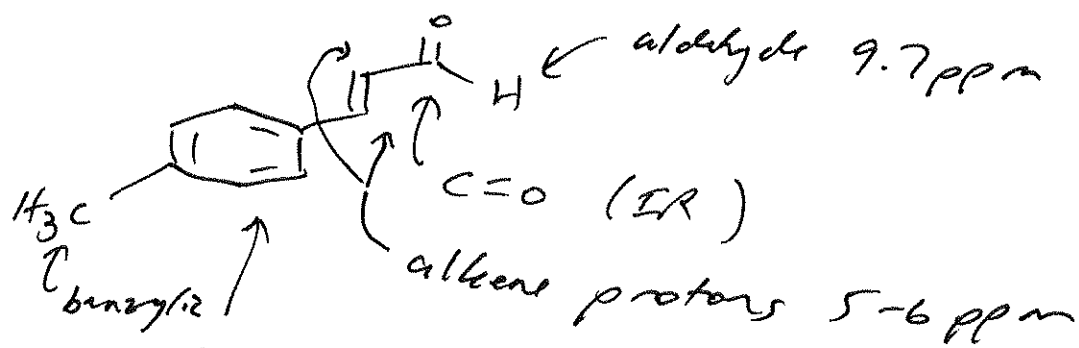


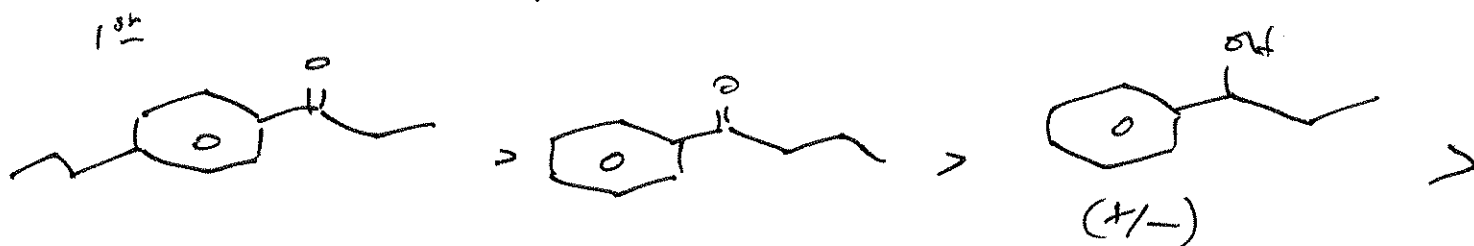
Problem set 5 - Answers

1.

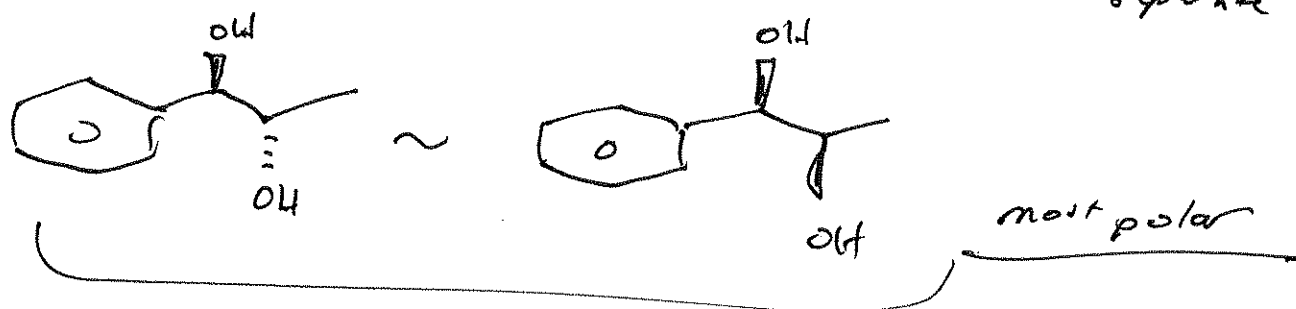


Symmetry causes only 8 C in ¹³C,
2 H, each a doublet

2. Silica nonpolar → polar



(enantiomers,
single appearance,
do not separate)



diastereomers, separate bands,

but cannot predict which elutes first

Reverse phase : polar → nonpolar

opposite order of above

At $t = 10$ minutes

100 amino acids = 100 amides

50% exchanged, so mass + 50 $H \rightarrow D$

Combine

$$11,280 + 84 + 50 = 11,414$$

$$\frac{m}{z} = \frac{11,414}{+1} = 11,414 \text{ observed}$$

At $t = 16$ h, the remaining 50 amides
exchange $H \rightarrow D$ (mass + 50 Da)

$$\frac{m}{z} = \frac{11,464}{+1} = 11,464 \text{ observed}$$

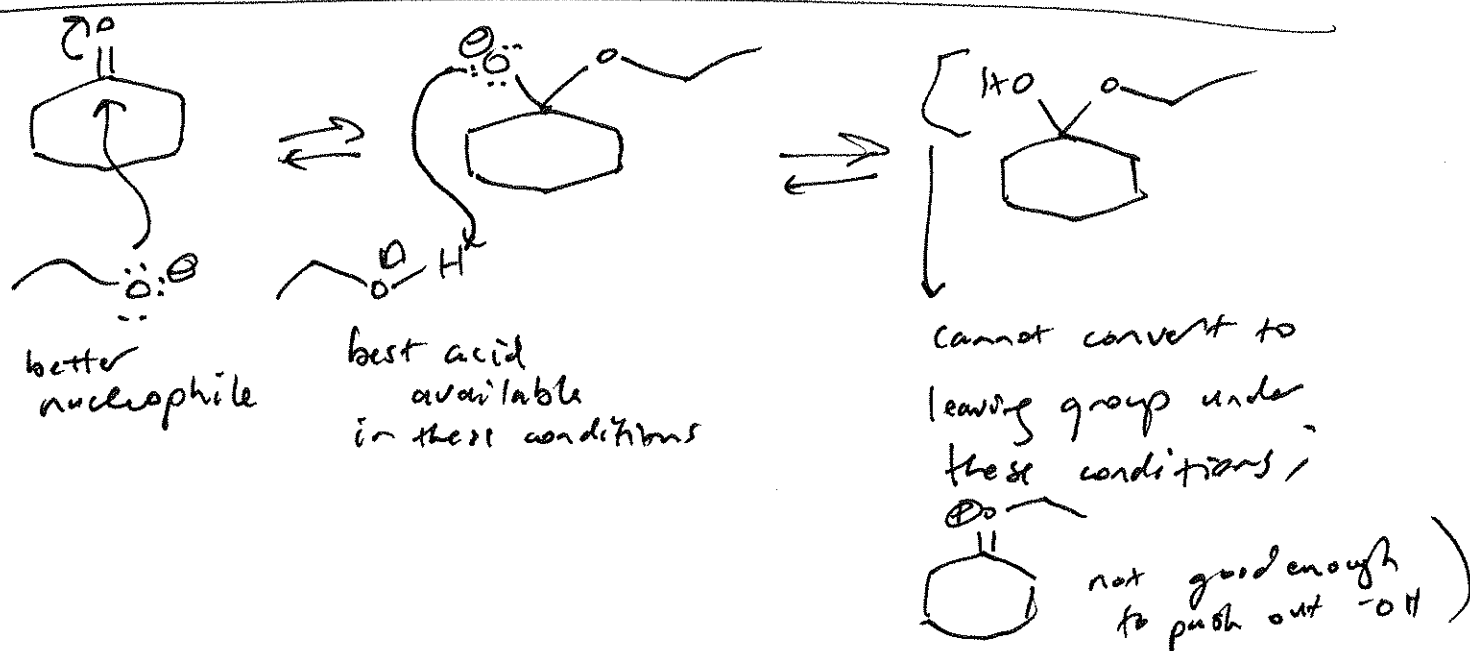
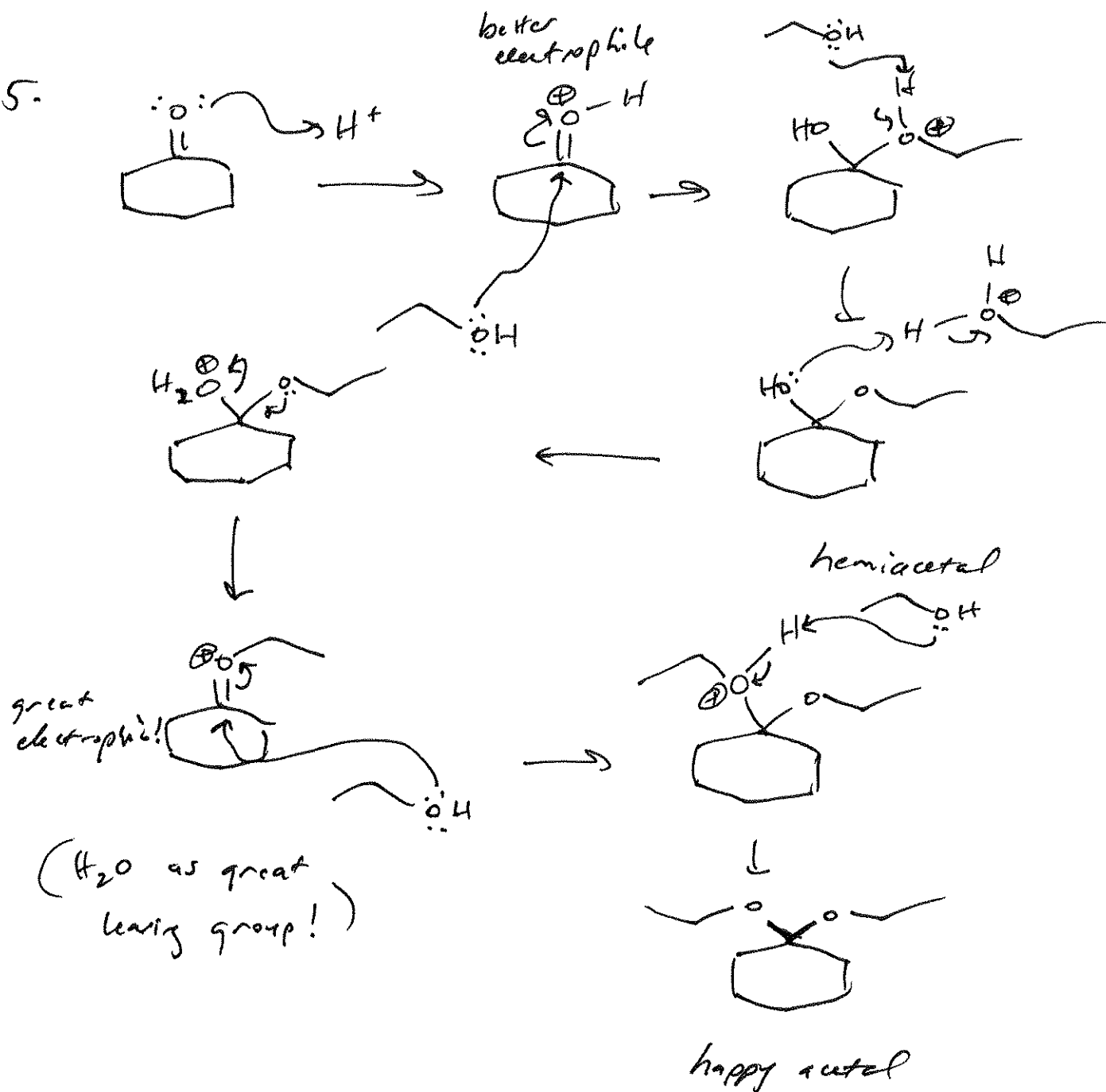
However, in the presence of p53, don't see

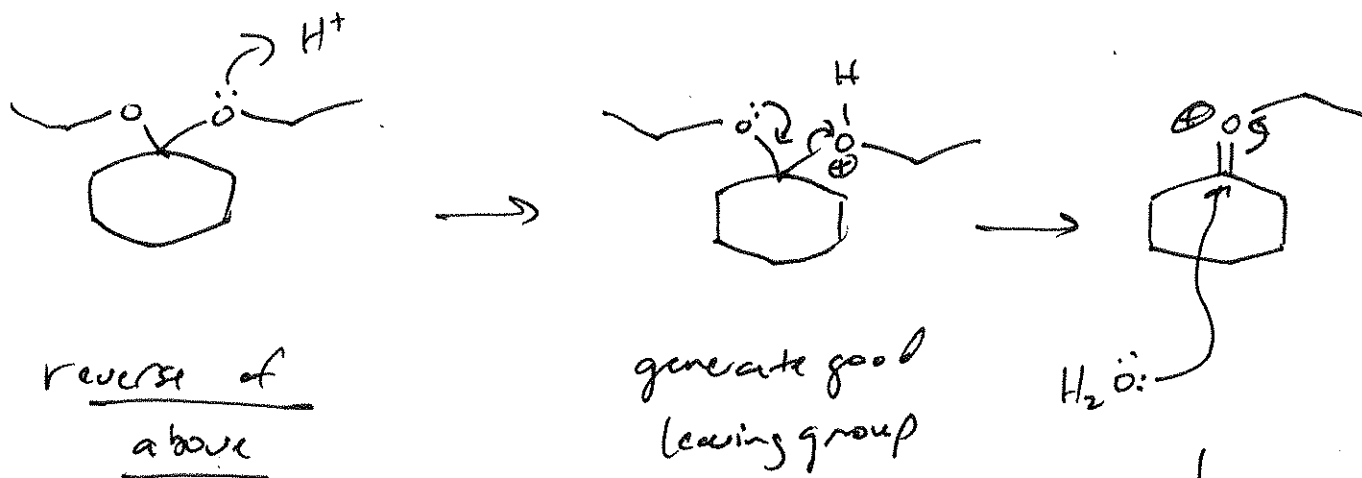
amide exchange at 16 minutes,

so instead

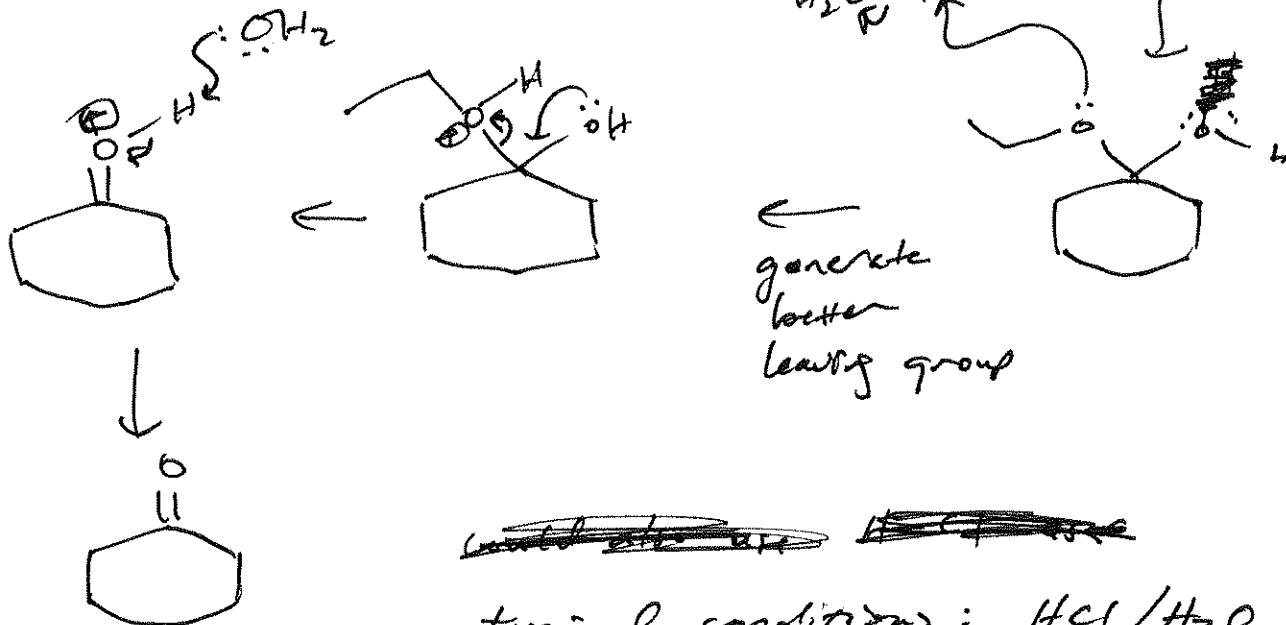
$$\frac{m}{z} = \frac{11,364}{+1} = 11,364$$

5.





(all intermediates identical; all bond-forming rxn. become bond-breaking, and vice versa)



~~could also use HCl as base~~

typical conditions: $\text{HCl}/\text{H}_2\text{O}$

could also use Cl^- as base

HCl as acid in mechanism

Key: Le Chatelier's principle

In EtOH/H^+ (e.g. $\text{EtOH}/\text{H}_2\text{SO}_4$), no H_2O , so driven to acetal

In $\text{H}_2\text{O}/\text{H}^+$, water present, driven to $\text{C}=\text{O}$