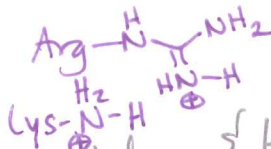
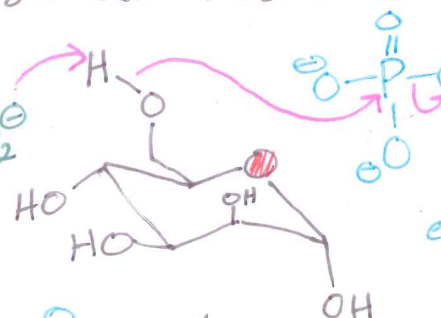


# Lecture 9 HW Key

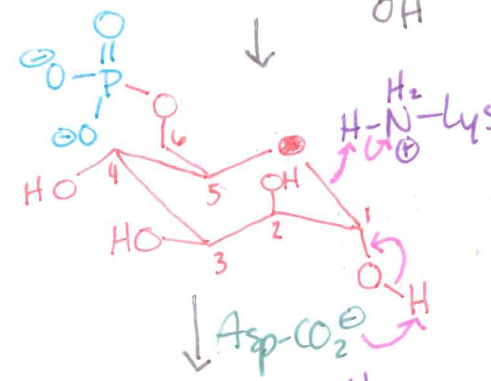
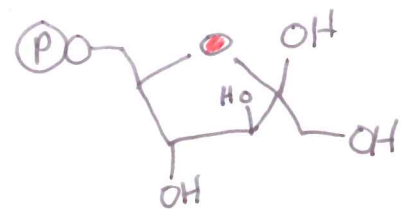
\* Use aa residues as acids & bases



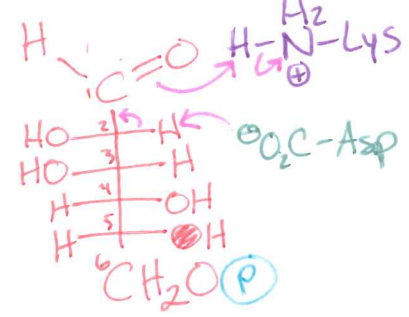
4.6



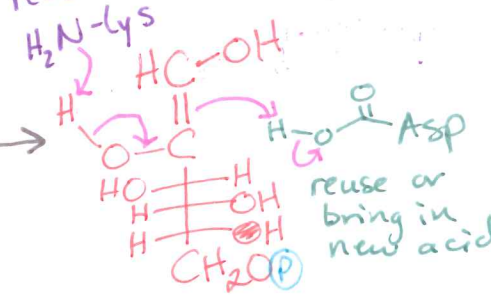
not specified in problem, educated guess!



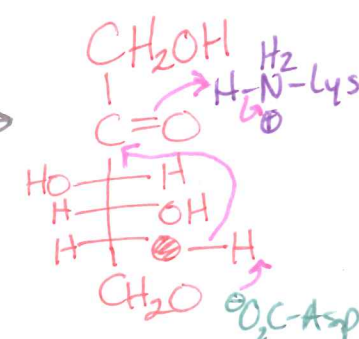
- ① Phosphorylation
- ② Ring-opening
- ③ Isomerization (aldose → ketose)
- ④ Ring closing



reuse or bring in new base (ex Asp-CO<sub>2</sub><sup>-</sup>)



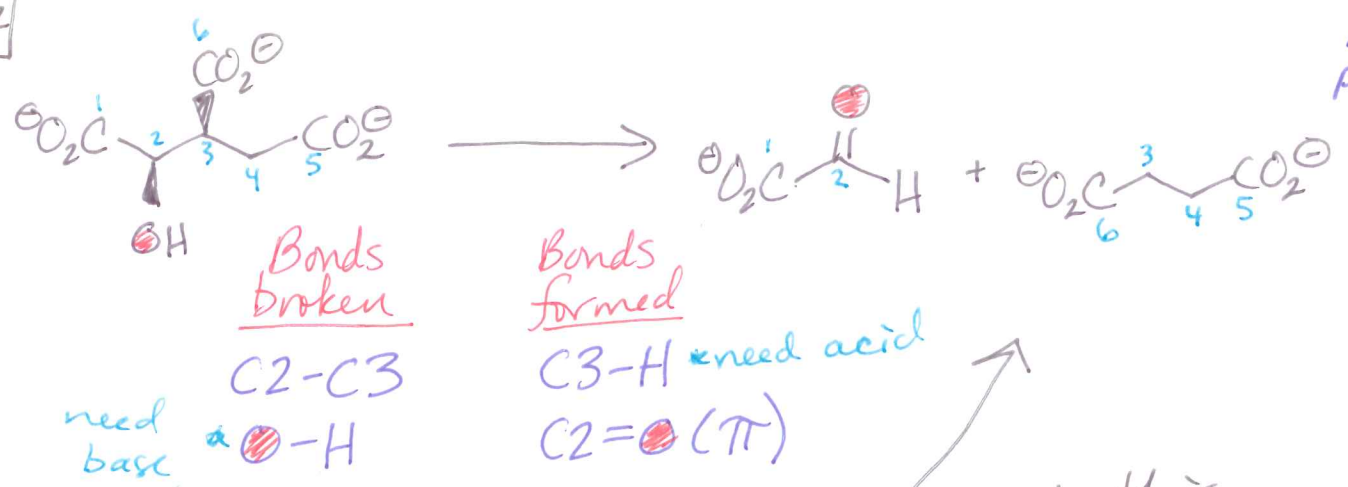
reuse or bring in new acid



\* This problem incorporates

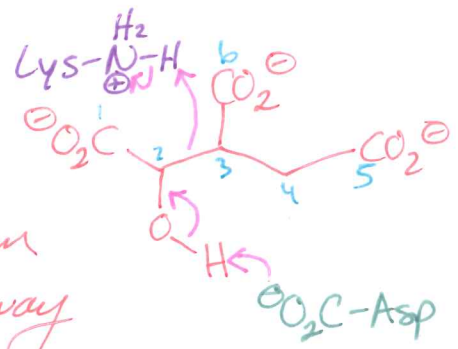
- NAS on P (Glycolysis steps 1, 8)
- Tautomerization (Glycolysis 5 & 9)
- Hemiacetal formation (forward & reverse)

4.7

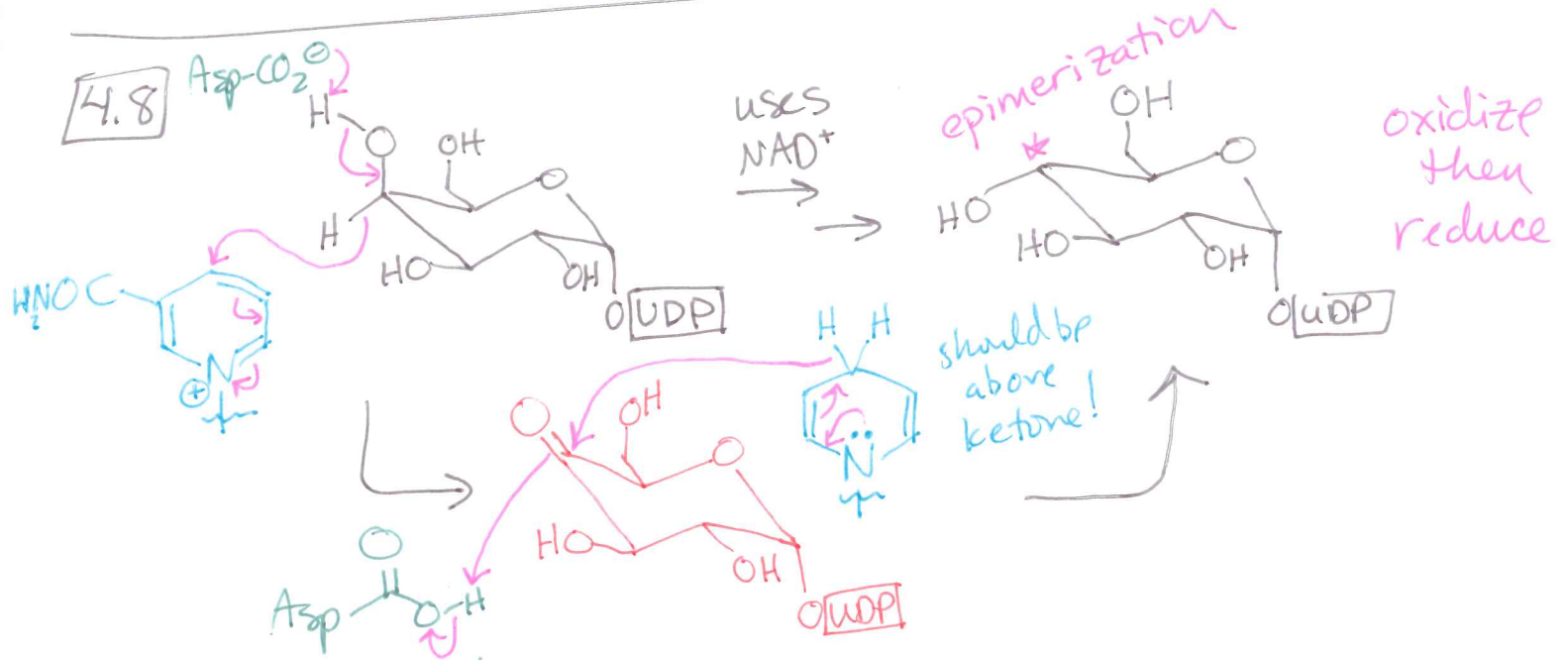


Can do this in one step

stereochem lost anyway

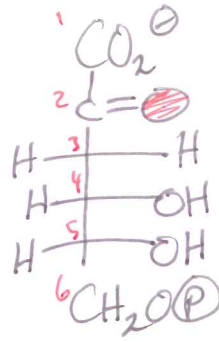
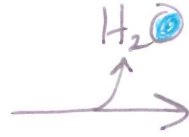
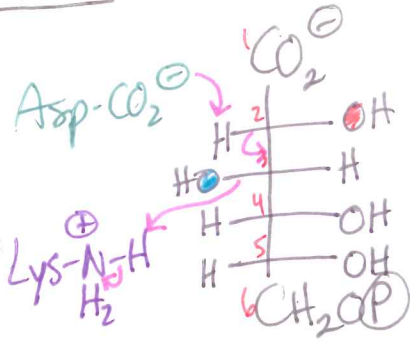


4.8



Can reuse Asp or bring in different acid (ex. Lys-N<sup>+</sup>H<sub>2</sub>-H)

4.9



29 HW  
Key  
P3

bonds broken

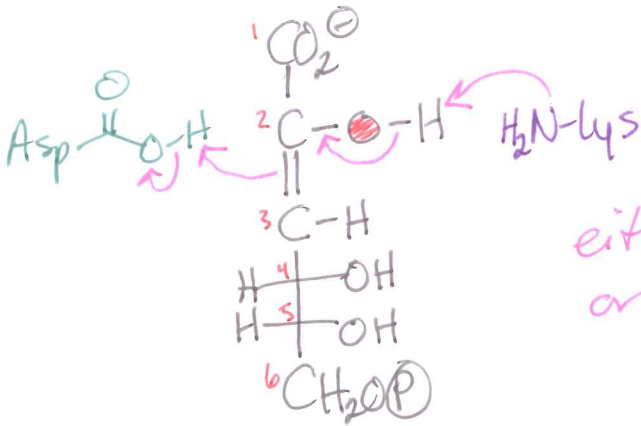
$\text{C2-H}$  \* need base  
 $\text{C=O}$  \* need base

bonds formed

$\text{C3-H}$  (H<sub>2</sub>O) \* need acid

$\text{C}=\text{O}$  (π)

$\text{C3-H}$  \* need acid



either re-use same aa's  
 or bring in new ones