How to Construct an AA pH Profile

(1) Fully protonate the AA

(2) Identify the groups that can lose a proton

(3) Determine the pKa's of these groups.

(4) The fully protonated AA will be "H₂A" or "H₃A"

(5) Lose protons from H₂A and H₃A stepwise according to the magnitude of the pKa values.

(6) Write structure for each AA form (e.g., H₃A, H₂A, HA, A)

(7) Determine the net charge on each form.

(8) Use the pKa values to identify the major form or forms present at any pH.

(9) Use the forms and pKa values to calculate an approximate pH value.
General L-α-TT Hydrolysis

Mechanism

1. Add enzyme (Ser 195 OH group)
2. Add water and proton transfer to His 57
3. Water replaces HNR'
4. Amine diffuses away
5. Ser 195 protonates
6. HNR' forms R-C=O

(Enzyme)
Step 2: "Amide to be hydrolyzed"

Step 3: 

Step 4: Product Diffuse Away