

Amino Acid Titrations

1. Write equations for the ionic dissociations of the amino acids W, C, and H, using the full structures.
2. **On graph paper**, draw separate titration curves for W, C, and H. Label the axes, and indicate the location and the value of each pK and pI. Use the pK values found in your text.
3. Consider the pKs for the two amino groups of lysine. For comparison, consider ethylamine with a pK of 10.8. Why is the pK of the alpha amino group so much lower than the other two values?
4. What is the pH of a dilute solution of histidine whose side chain is 80% dissociated?
5. What are the concentrations of all species in a 0.25 M solution of cysteine at pH 7.50? Hint: Use the Henderson-Hasselbach equation, starting with the pK nearest the pH, since these will be the predominant species. Then work your way to the other species. Not quite as accurate, but a decent approximation!