

(Don't forget that each question should be answered on a separate sheet of paper. Also, please *type* your narrative answers.)

1. Calculate the isoelectric point (pI) of the following peptides:
  - a. PHILLIPS
  - b. MCRAE
  - c. GREENE
2. Draw the peptide, STACEY. What is its net charge at pH 7.0?
3. The two C $\alpha$  hydrogen atoms of Gly are said to be *prochiral* because when one of them is replaced by another group, C $\alpha$  becomes chiral. Draw a Fischer projection of Gly and indicate which H must be replaced with a methyl group to yield D-Ala.
4. If you had a 200 mL solution of 2.5 mM aspartic acid, buffered at pH 2.2, how many moles of KOH are required to increase the pH to 9.3? (*you may assume constant volume*)