

Name _____

Score _____

Exam 1, BICH 440 Honors, Monday, September 27, 2004

You **MUST** sign the following academic integrity statement:

On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work. Signed: _____

Write concise answers to demonstrate effectively your mastery of the subject. Show your work in order to receive maximum credit where applicable.

gas constant R 8.315 J/mol-K

1. (15 pts) How much 5M NaOH is required to change the pH of 2 liters of 0.2M glycine buffer from pH9 to pH10? The pKs of glycine are 2.3 and 9.6.

2. (15 pts) Draw the structure of the tetrapeptide: leucine – proline – lysine – histidine that is ionized as it would exist at pH 12. You do NOT need to depict the proper stereochemistry.

3. (16 pts) Consider the peptides labeled A through E, below. Choose one peptide (or two, depending on the query) that best answers each question. A given peptide may be used as the answer to more than one question.

- A. glycine – methionine – proline - glycine
- B. cysteine – tryptophan – tyrosine - histidine
- C. lysine – serine – valine – glutamic acid
- D. glutamic acid – tyrosine – alanine - methionine
- E. arginine – threonine – leucine – aspartic acid

_____ reacts with N-ethylmaleimide.

_____ predicted to elute last from a DEAE column at pH 8.

_____ two peptides with sequences containing conservative substitutions

_____ This sequence is least likely to be part of an alpha helix in a protein.

_____ has the greatest absorbance at 280 nm.

_____ cleaved by cyanogen bromide

_____ has the lowest isoelectric point (worth 4 points)

