

BML101-Quiz 2

Name:

Answer all questions

ID Number:

Full marks: 30, Time: 45 minutes

PART A (10 marks)

1. The most abundant element in the human body is _____.
2. Alpha-helix is an example of _____ structure of a protein.
3. The net charge of the zwitterion form of Gly is _____.
4. In the tripeptide Lys-Pro-Ile, the C-terminal residue is _____.
5. The two amino acids containing sulfur are _____ and methionine.
6. A protein found in hair, horn, nails and feathers is _____.
7. _____ is a technique used to determine the tertiary structure of a protein.
8. An example of an interaction that is important in stabilizing protein structure is _____.
9. The type of enzyme inhibition in which V_{\max} is unaffected is _____.
10. For a simple $E + S \rightarrow ES \rightarrow E + P$ reaction, the kinetics _____ order in $[S]$ when $[S] \gg K_M$.

PART B (10 marks, only one answer may be correct)

1. Which of the following amino acids has a charged polar side chain at pH 7?

- A) Leu
- B) Ala
- C) Met
- D) Trp
- E) Glu

2. Which of the following amino acids has an uncharged polar side chain at pH 7?

- A) Arg
- B) Thr
- C) Glu
- D) Pro
- E) Ile

3. The disulfide bond between two cysteine molecules:

- A) is a peptide bond.
- B) is an ionic bond that is stable at physiological pH.
- C) is a covalent bond formed by oxidation.
- D) is a hydrogen bond between the two sulfhydryl groups.
- E) is a weak ion-induced dipole attraction.

4. Enzymes that hydrolyze the internal peptide bonds (not the peptide bonds of the terminal amino acids) of a protein are:

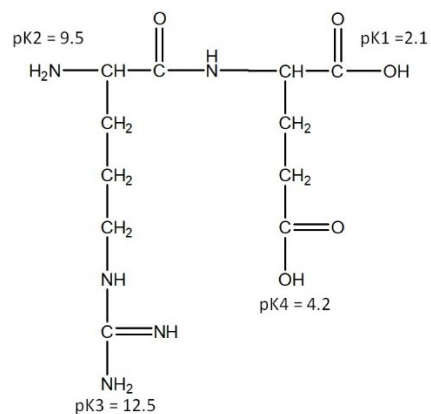
- A) oxidoreductases.
- B) lyases.
- C) endopeptidases.
- D) nucleases.
- E) exopeptidases.

5. What is the velocity of a first-order reaction when the reactant concentration is $6 \times 10^{-2} \text{ M}$ and the rate constant is $8 \times 10^3 \text{ sec}^{-1}$?

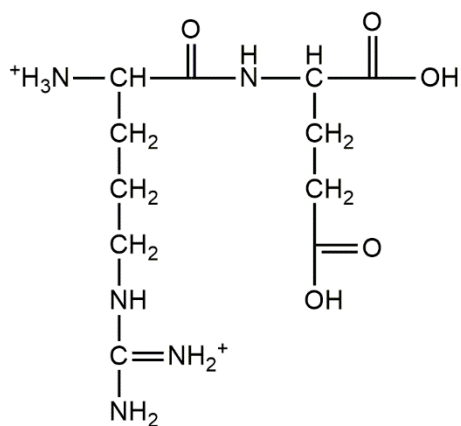
- A) $1.33 \times 10^5 \text{ M}^{-1}\text{sec}^{-1}$
- B) $1.33 \times 10^5 \text{ M sec}$
- C) $7.5 \times 10^{-2} \text{ M sec}$
- D) $4.8 \times 10^2 \text{ M sec}^{-1}$
- E) not enough data are given to make this calculation

PART C (10 marks)

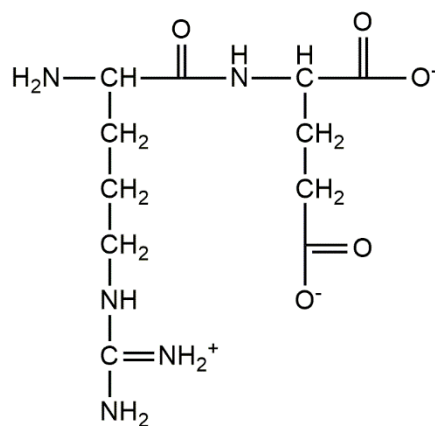
What are different ionic forms of the dipeptide below at pH of 1 and 10.5? What is the PI of the dipeptide?



pH 1



pH 10.5



$$\text{pI} = (4.2 + 9.5) / 2 = 6.85$$