

PROTEINS

GENERAL CHARACTERISTICS AND IMPORTANCES:

BUILDING BLOCKS:

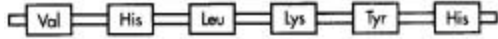
ANION	CATION	DIPOLAR ION

CLASSIFICATION:	
NONPOLAR:	POLAR:
$ \begin{array}{c} \text{H} \\ \\ \text{H}_3\text{N}^+ - \text{C} - \text{C} \begin{array}{l} \text{=} \text{O} \\ \diagdown \text{O}^- \end{array} \\ \\ \text{CH}_2 \\ \\ \text{CH} \\ / \quad \backslash \\ \text{CH}_3 \quad \text{CH}_3 \end{array} $	$ \begin{array}{c} \text{H} \\ \\ \text{H}_3\text{N}^+ - \text{C} - \text{C} \begin{array}{l} \text{=} \text{O} \\ \diagdown \text{O}^- \end{array} \\ \\ \text{CH}_2 \\ \\ \text{C} \\ / \quad \backslash \\ \text{NH}_2 \quad \text{O} \end{array} $
POLAR CHARGED ACIDIC:	POLAR CHARGED BASIC:
$ \begin{array}{c} \text{H} \\ \\ \text{H}_3\text{N}^+ - \text{C} - \text{C} \begin{array}{l} \text{=} \text{O} \\ \diagdown \text{O}^- \end{array} \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{C} \\ / \quad \backslash \\ \text{O}^- \quad \text{O} \end{array} $	$ \begin{array}{c} \text{H} \\ \\ \text{H}_3\text{N}^+ - \text{C} - \text{C} \begin{array}{l} \text{=} \text{O} \\ \diagdown \text{O}^- \end{array} \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{NH}_3^+ \end{array} $

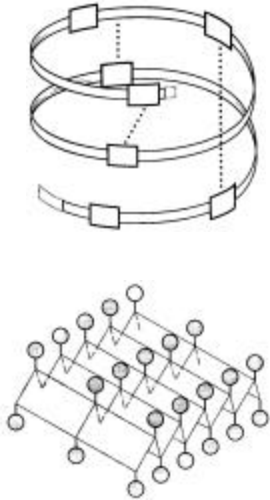
PEPTIDE BONDS:

PROTEIN CONFORMATION:

PRIMARY :



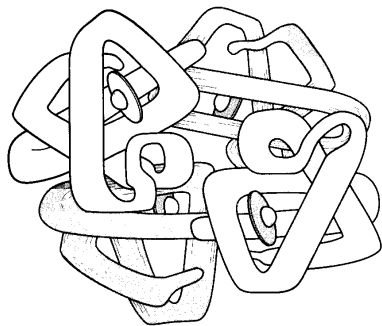
SECONDARY :



TERTIARY :



QUATERNARY :

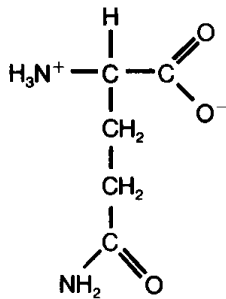


DENATURATION:

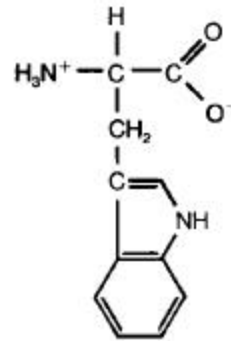
QUESTIONS:

1. Classify each of the following amino acids as **nonpolar**, **polar uncharged**, **polar charged acidic**, or **polar charged basic**.

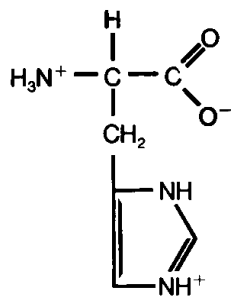
a. _____



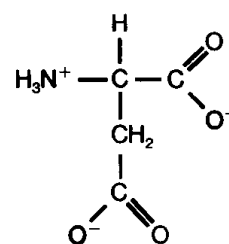
b. _____



c. _____

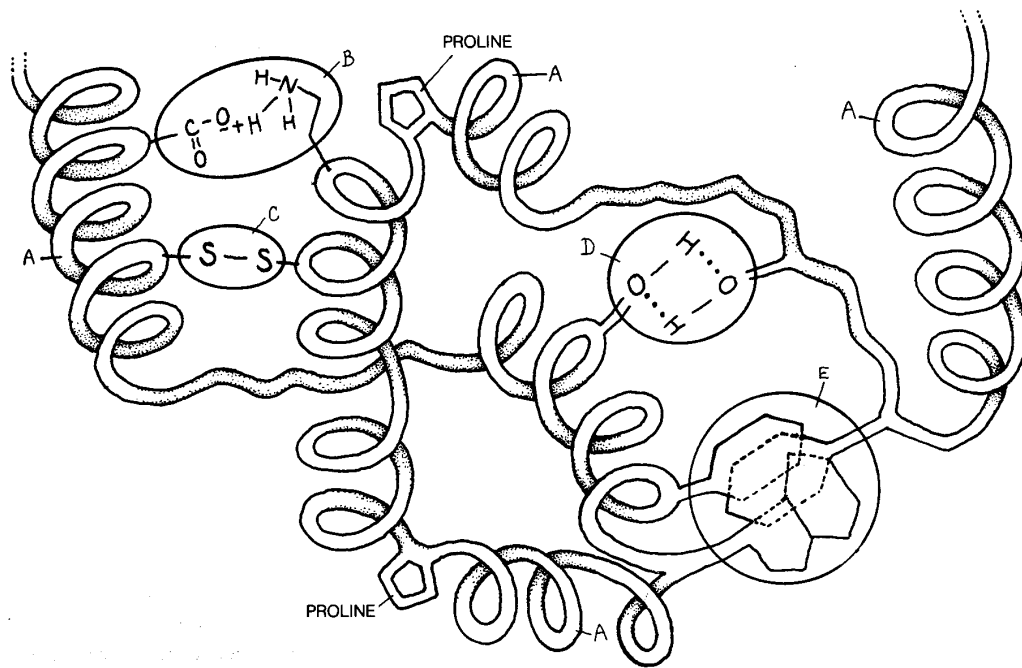


d. _____



2. Draw a peptide bond between two amino acids.

3. Use the drawing below to answer the questions that follow.



a. What level of protein structure is shown in the picture? _____

b. Match the following with the correct letter from the diagram.

_____ α helix

_____ Disulfide bridge

_____ Hydrogen bonding

_____ Hydrophobic interaction

_____ Ionic bond

4. Indicate the level of protection structure (1, 2, 3, or 4) described in each of the following.

_____ α helix

_____ β pleated sheets

_____ Collagen and hemoglobin

_____ Determined by the sequence of DNA bases

_____ Form stabilized by hydrogen bonds

_____ Form stabilized by hydrogen bonds, ionic bonds, hydrophobic interactions, and disulfide bridges

_____ Globular proteins

_____ Interaction among several polypeptide chains

_____ Most enzymes

_____ Regular, repeated folding of the peptide chain

_____ Sequence of amino acids in a protein

5. What happens to a protein when it is denatured?

6. How does denaturation affect the function of a protein? Why?

7. Explain how each of the following causes a protein to denature.

Subjecting the protein to high temperature	
Placing the protein in a strong acid	
Placing the protein in an organic solvent	