

## **Sixth directed work of biochemistry**

### **Structure and physicochemical properties of proteins**

#### **Exercise 1.**

##### **a. Natural amino acids are characterized by the following general properties:**

- Their degree of hydrophobicity depends on the nature of their side chain.
- They have a carboxylic function and an amine function each carried by a carbon atom.
- Alanine cannot be synthesized by the body; it must be provided by food.
- Tyrosine is a precursor of catecholamine biosynthesis.

##### **b. Regarding the structure of proteins, which of the following statements is (are) correct?**

- All proteins have a quaternary structure.
- Disulfide bonds are essential to the tertiary structure of proteins.
- Globular proteins have a structural role.
- A primary structural protein is a native (biologically active) protein.

#### **Exercise 2.**

Here is a list of amino acids that can be found involved in proteins: Aspartate, Leucine, Lysine, Serine and Phenylalanine.

1. Give their structural formulas.
2. Order them from least polar to most polar
3. Specify those whose radical is ionizable

**Exercise 3.** Consider the following structure of a protein, in which certain regions of amino acid residues have been represented:



1. List the different types of bonds presented in this structure.
2. Specify the types of covalent bond and non-covalent bond.