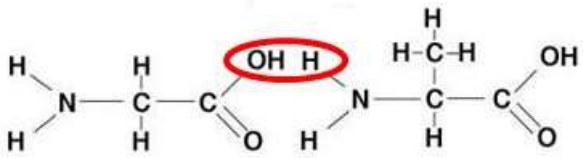
Appendix 5 – Student's Test SOLUTIONS

1. *Complete the following passage with the most appropriate terms*

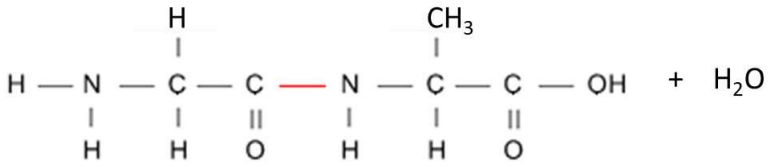
Polymers can be assembled by reactions of condensation in which an atom of hydrogen of a monomer binds to a hydroxy group of a second monomer to form a molecule of water

2. Two amino acids are given:



A. In the diagram above, highlight with a circle the atoms (or atomic groups) that are eliminated in the formation of the peptide bond between the first and second amino acids.

B. Write below the formulas of the products of the reaction between the two amino acids:



3. By cooking an egg, the proteins contained in it undergo a modification:

A. What is this modification called? Denaturation

B. Is it reversible or not? No

C. What happens at the molecular level to the modified proteins? They lose the quaternary, tertiary and secondary structure which is present in their native state

4. *Choose the two correct answers.*

Which of the following are probably not affected by the denaturation of a protein?

A. peptide bonds

B. hydrogen bonds

C. the primary structure

D. the tertiary structure

5. *Choose the two correct answers.*

Collagen, myosin, haemoglobin:

A. contain C, H, O, N

B. all have tertiary structure only

C. are made up of amino acids

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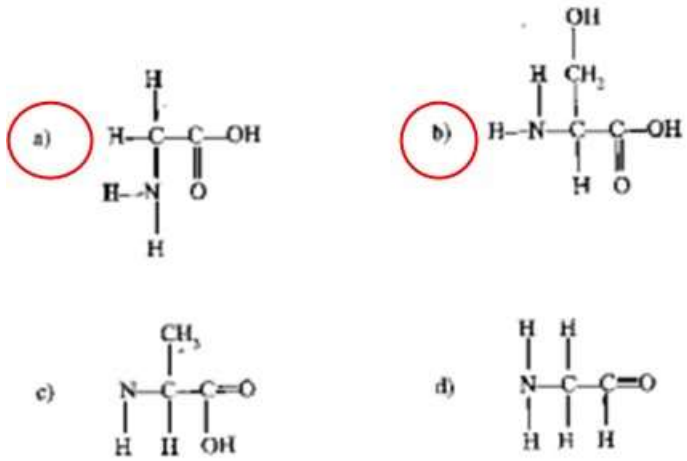
D. all have a structural function
E. all have the same amino acid sequences

6. By treating wool with NaOH you get:
A. the keratin flocculation
B. the keratin extraction
C. the keratin precipitation
D. the keratin sedimentation

7. Which of these molecules do you think are amino acids?



8. At the end of the first experience we obtained:
A. a solution
B. a colloidal solution
C. a liquid
D. a precipitate

9. The isoelectric point of a protein is:
A. the temperature at which the molecule has zero electric charge
B. the pH value at which the molecule has zero electric charge
C. the ddp to be applied to precipitate the protein
D. the pH value at which the protein denatures

10. A student conducts a biuret test on the tubes shown below.

Test tube 1	Test tube 2	Test tube 3	Test tube 4
			
Negative control	Positive control	Solution containing a protein	Solution containing a protein and protease
Blue	Violet	Violet	Blue or very light violet

A. Complete the table by indicating the color obtained in each tube after the test.

B. Why were tubes 1 and 2 used?

To verify the correct execution of the experiment.

C. Motivate the result obtained in test tube 4.

The protease hydrolyzes the protein and very short single amino acids or peptides are obtained; the reaction is negative with amino acids and dipeptides whereas it is positive with polypeptides, since there are several $CONH_2$ groups

11. The biuret test is used to check for the presence of:

A. nucleic acids
B. polypeptides
C. amino acids
D. dipeptides

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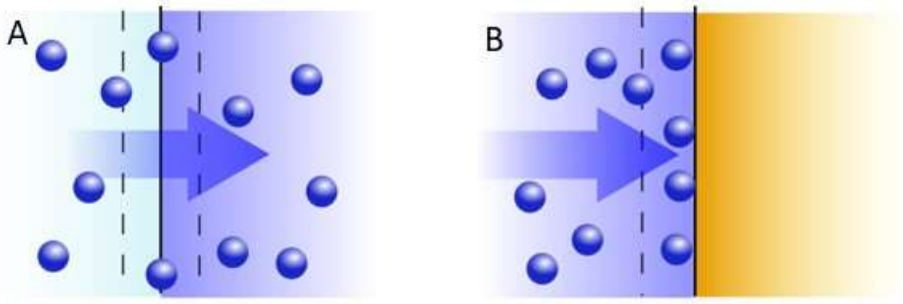
12. In laboratory experience number 4, wool has proven effective as an adsorbent material against Cu^{2+} ions.

A. Which of the two images below best represents adsorption? B



B. Write a short definition of:

i. Absorption: It's a process in which atoms, molecules or ions enter some bulk phase (liquid or solid material).

ii. Adsorption: It's the adhesion of atoms, ions or molecules from a gas, liquid or dissolved solid to a surface.