

Amino-acids and proteins

Answer all the questions below then check your answers

1. What are the monomers that make up proteins called?

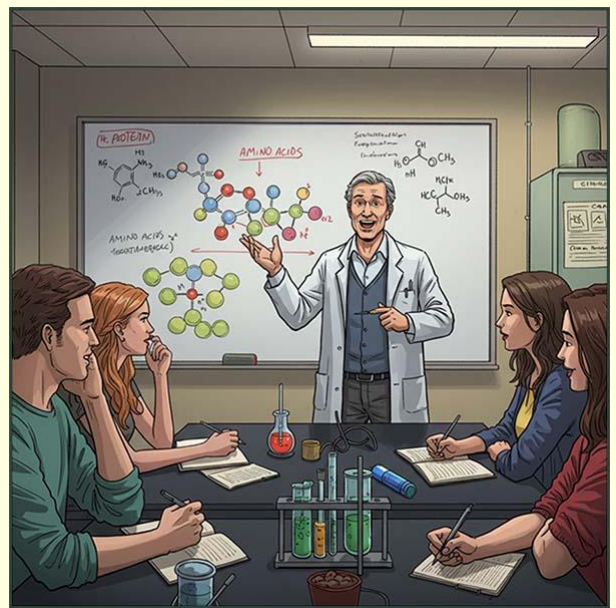
- a) Monosaccharides
- b) Amino acids
- c) Fatty acids
- d) Nucleotides

2. How many common amino acids are found in living organisms?

- a) 10
- b) 15
- c) 20
- d) 25

3. Which functional groups are found in an amino acid?

- a) Hydroxyl (-OH) and carboxyl (-COOH)
- b) Amino (-NH₂) and carboxyl (-COOH)
- c) Carbonyl (-C=O) and amide (-CONH₂)
- d) Aldehyde (-CHO) and hydroxyl (-OH)



Fill in the Blanks to complete the sentences below:

4. The bond that forms between two amino acids in a protein is called a _____ bond.

b. The simplest amino acid, where the R-group is a hydrogen atom, is called _____.

c. The process by which amino acids join together to form proteins involves the removal of a small molecule, usually _____.

5. What is meant by the term "primary structure" of a protein?

6. Explain what happens during a condensation reaction between two amino acids.

True or False

7. All amino acids have the same R-group.

b. A polypeptide is a chain of amino acids linked by peptide bonds.

8. Compare and contrast a dipeptide and a polypeptide.

9. Explain how the diversity of proteins arises from just 20 amino acids.
10. Given the amino acids glycine and alanine, draw or describe the dipeptide formed when they undergo a condensation reaction.

Answers

1. What are the monomers that make up proteins called?

- a) Monosaccharides b) Amino acids
c) Fatty acids d) Nucleotides

Answer: b) Amino acids

2. How many common amino acids are found in living organisms?

- a) 10 b) 15 c) 20 d) 25

Answer: c) 20

3. Which functional groups are found in an amino acid?

- a) Hydroxyl (-OH) and carboxyl (-COOH)
b) Amino (-NH₂) and carboxyl (-COOH)
c) Carbonyl (-C=O) and amide (-CONH₂)
d) Aldehyde (-CHO) and hydroxyl (-OH)

Answer: b) Amino (-NH₂) and carboxyl (-COOH)

Fill in the Blanks to complete the sentences below:

4. The bond that forms between two amino acids in a protein is called a _____ bond.

Answer: Peptide

b. The simplest amino acid, where the R-group is a hydrogen atom, is called _____.

Answer: Glycine

c. The process by which amino acids join together to form proteins involves the removal of a small molecule, usually _____.

Answer: Water

5. What is meant by the term "primary structure" of a protein?

Answer: The primary structure of a protein refers to the specific sequence or order of amino acids in a polypeptide chain.

6. Explain what happens during a condensation reaction between two amino acids.

Answer: During a condensation reaction, the carboxyl ($-COOH$) group of one amino acid reacts with the amino ($-NH_2$) group of another, forming a peptide bond and releasing a water molecule.

True or False

7. All amino acids have the same R-group.

Answer: False

b. A polypeptide is a chain of amino acids linked by peptide bonds.

Answer: True

8. Compare and contrast a dipeptide and a polypeptide.

Answer: A dipeptide is a molecule formed by the condensation reaction between two amino acids, whereas a polypeptide consists of multiple amino acids linked together by peptide bonds. A polypeptide can fold into a functional protein.

9. Explain how the diversity of proteins arises from just 20 amino acids.

Answer: The diversity of proteins is due to the vast number of possible combinations of the 20 amino acids. Proteins can have different lengths, sequences, and structures, leading to a wide variety of functions in living organisms.

10. Given the amino acids glycine and alanine, draw or describe the dipeptide formed when they undergo a condensation reaction.

Answer:

peptide link or amide bond.

