

Protein Chemistry

I-MCQ:

Choose the correct answer

1- Which of the following is NOT an essential amino acid?

- a) Tryptophan.
- b) Methionine.
- c) Lysine.
- d) Serine

2- Which of the following is a branched amino acid?

- a) Cysteine.
- b) Isoleucine.
- c) Proline.
- d) Histidine.

3- Which of the following amino acids is known as half-cystine residue?

- a) Cysteine.
- b) Isoleucine.
- c) Valine.
- d) Histidine.

4- Serine and threonine are polar amino acids due to:

- a) Reactive hydroxyl group in the side chain.
- b) Reactive thiol group in the side chain.
- c) Reactive amide group in the side chain.
- d) Reactive carboxyl group in the side chain.

5- The two amino acids that contain sulfur atoms are:

- a) Cysteine and methionine.
- b) Cysteine and serine.
- c) Methionine and threonine.
- d) Methionine and serine.

6- Amino acids are ampholytes because they can function as either a(n):

- a) Acid or base.
- b) Neutral molecule or ion.
- c) Polar or nonpolar.
- d) Strand (chain) or branched molecule.

7- Which of the following is an α -imino acid?

- a) Serine.
- b) Threonine.
- c) Valine.
- d) Proline.

8- Which of the following amino acids contain a heterocyclic ring?

- a) Alanine.
- b) Valine.
- c) Cysteine.
- d) Histidine.

9- All of the amino acids that are found in proteins contain an amino group, except:

- a) Proline.
- b) Histidine.
- c) Glycine.
- d) Serine.

10- All of the following are aliphatic amino acids except:

- a) Glycine
- b) Alanine
- c) Proline
- d) Lysine

11-All of the following are hydroxy-containing amino acids except:

- a) Serine
- b) Threonine
- c) Valine
- d) Tyrosine

12- Lysine is a:

- a) Basic ketogenic amino acid
- b) Ketogenic and glucogenic amino acid
- c) Acidic glucogenic amino acid
- d) Non essential amino acid

13-The two amino acids that are purely ketogenic are:

- a) Lysine and leucine.
- b) Lysine and isoleucine.
- c) Leucine and isoleucine.
- d) Lysine and valine.

14-The zwitter ion is:

- a) The dipolar ion
- b) Positively charged ions
- c) Negatively charged ions
- d) Non charged ions.

15- When a peptide bond is formed there is removal of:

- a) CO_2
- b) H_2O
- c) NH_3
- d) H^+

16- Proteins of high biological value:

- a) Contain all essential amino acids
- b) Are poor in essential amino acids
- c) Are of plant source
- d) Contain amino acid glycine

17- 2ry structure of proteins is stabilized by:

- a) Ionic bond.
- b) Hydrophobic interaction.
- c) Hydrogen bonds.
- d) Peptide bond.

18- α -helices, β -pleated sheets and β -bends are examples of protein's:

- a) Primary structure.
- b) Secondary structure.
- c) Tertiary structure.
- d) Quaternary structure.

19- The tertiary structure of proteins is stabilized by the following, except:

- a) Hydrogen bonds.
- b) Hydrophobic interactions.
- c) Peptide bonds.
- d) Disulfide bonds.

20- The four-subunit structure of the Hb represents protein's:

- a) Primary structure.
- b) Secondary structure.
- c) Tertiary structure.
- d) Quaternary structure.

21- A protein can be unfolded by a process called:

- a) Renaturation.
- b) Denaturation.
- c) Oxidation.
- d) Reduction.

22- The protein bonds that are not lost by denaturation is:

- a) Peptide bonds
- b) Hydrogen bonds
- c) Disulfide bonds
- d) Electrostatic bond

23- Alzheimer and Parkinson's disease are age related defects in action of:

- a) Ubiquitin.
 - b) lysosomal proteases.
 - c) Proteosomes.
 - d) Chaperones.
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24- One of the following about protein denaturation is NOT true:

- a) It is loss of primary, secondary, tertiary and quaternary structures.
- b) It causes loss of biological activity of proteins.
- c) It causes increased viscosity of proteins.
- d) Strong acids can cause protein denaturation.

25- The following are basic amino acids:

- a) Lysine, tryptophan, arginine.
- b) Alanine, histidine, glycine.
- c) Histidine, lysine, arginine.
- d) Arginine, lysine, valine.

26 -Branched chain amino acids include:

- a) Glutamine, asparagine, valine.
- b) Valine, leucine, threonine.
- c) Leucine, isoleucine, valine.
- d) Valine, isoleucine, methionine.

27 -A nonessential amino acid containing sulfur is:

- a) Methionine.
- b) Threonine.
- c) Valine.
- d) Cysteine.

28-During denaturation of proteins, all of the following are disrupted except:

- a) Primary structure
- b) Secondary structure
- c) Tertiary structure
- d) Quaternary structure

29-Denaturation of proteins leads to all the following except:

- a) Increased viscosity.
- b) decreased solubility.
- c) Loss of biological activity.
- d) Increased digestibility.

30- All of the following are important in maintenance of the secondary, tertiary and quaternary structure of proteins EXCEPT

- a) hydrogen bonds
- b) peptide bonds
- c) hydrophobic interactions
- d) ionic bonds

31-All of the amino acids that are found in proteins contain an amino group, Except :

- a) Proline
- b) Histidine
- c) Glycine
- d) Serine.

32- The 21st amino acid is:

- a) hydroxy lysine
- b) hydroxyl proline .
- c) selenocysteine
- d) citrulline

33- Sulphur containing amino acids are:

- a) Cysteine and methionine
- b) Methionine and threonine.
- c) Cysteine and threonine
- d) Cysteine and serine.

34-Tertiary structure is maintained by:

- a) Hydrophobic interactions
- b) Hydrogen bond .
- c) Disulphide bond
- d) All of the above.

35-Amino acids with hydroxyl groups are:

- a) Serine and alanine
- b) Alanine and valine .
- c) Serine and threonine
- d) Valine and isoleucine.

36 -Which amino acid can form disulphide bonds?

- a) Glycine
- b) Proline.
- c) Glutamate.
- d) Cysteine.

37- An amino acid which contains a disulphide bond is:

- a) Lysine
- b) Methionine
- c) Homocysteine
- d) Cystine

38-All of the following are polar amino acids Except:

- a) Alanine
- b) Glutamate
- c) Arginine
- d) Serine

39- Acidic amino acids include:

- a) Arginine and glutamate
- b) Aspartate and glutamate.
- c) Aspartate and lysine
- d) Aspartate and asparagines

40- All of the below mentioned amino acids can participate in hydrogen bonding **Except:**

- Serine
- Cysteine.
- Threonine
- Valine.

41- The primary structure of protein represents:

- Linear sequence of amino acids joined by peptide bond.
- 3-dimensional structure of protein.
- Helical structure of protein.
- Sub unit structure of protein.

42- Which of the following amino acids is mostly likely to disrupt an alpha helix?

- Proline.
- Leucine.
- Glycine.
- Valine.

MCQ Answers

1-d	2-b	3a	4-a	5-a	6-a	7-d	8-d	9-a	10-c
11-c	12-a	13-a	14-a	15-b	16-a	17-c	18-b	19-c	20-d
21-b	22-a	23-d	24-a	25-c	26-c	27-d	28-a	29-b	30-b
31-a	32-c	33-a	34-d	35-c	36-d	37-d	38-a	39-b	40-d
41-a	42-a								

II- Match each group of amino acids with the suitable description:

A-

- Cysteine & Methionine
- Phenylalanine & Tyrosine
- Leucine & Lysine
- Proline & Hydroxyproline
- Arginine & Lysine

- Imino acids.
- Acidic amino acids
- Sulfur containing amino acids.
- Aromatic amino acids.
- Pure ketogenic amino acids
- Basic amino acids.

B-

- Cysteine
- Leucine
- Proline
- Glutamic acid
- Serine
- Arginine
- Glycine

- OH containing amino acid.
- Basic amino acid.
- Sulfur containing amino acid.
- Aromatic amino acid.
- Acidic amino acid.
- Ketogenic amino acid.
- Imino amino acid.
- Hydrophobic amino acid.