

Q1. Which of the following is a fibrous protein?

- a) Myoglobin
- b) Ribonuclease
- c) Insulin
- d) Collagen

Q2. Which of the following protein structures is stabilized only by non-covalent interactions?

- a) Primary → (disulfide) covalent
- b) Secondary → H-bond (non-covalent)
- c) Tertiary
- d) Quaternary

Q3. Which of the following amino acids disrupts the α -helix?

- a) Proline
- b) Phenylalanine
- c) Tyrosine
- d) Tryptophane

Q4. which of the following marks a transition between one secondary structure and another?

- a) A greek key
- b) A reverse turn
- c) A motif
- d) A β -bulge

Q5. myoglobin can bind only to :

- a) Oxygen
- b) Hydrogen
- c) Carbon dioxide
- d) BPG

Q6. Which property about fibrous protein is correct?

- a) Is spherical in shape
- b) Is water soluble
- c) Is like myosin
- d) Is rod-like shape

Q7. Which of the following statements about protein denaturation is true?

- a) Denaturation refers to the disruption of the tertiary structure of proteins.
- b) Denaturation can be performed by only one way
- c) Denaturation by heat is reversible
- d) Ribonuclease can be completely denatured by the actions of urea alone.

Q8. The main property of myoglobin and hemoglobin that makes them an efficient system for oxygen delivery from lungs to muscles is :

- a) Hydrophobicity
- b) Different binding affinities
- c) Movement of the protein shapes
- d) Cooperativity

Q9. which statement is not correct about myoglobin?

- a) Is an example of a protein tertiary structure
- b) Consist of a single polypeptide chain
- c) Exhibits positive cooperatively when oxygen binds to it
- d) Has eight alpha , helical regions

Q10. which of the following properties of hemoglobin is an efficient system for oxygen delivery from lungs to muscles due to:

- a) The binding of the heme with $Fe(III)$
- b) Similar binding affinities for oxygen at different pH values
- c) The fact that binding with 2,3-bisphosphoglycerate has no effect on oxygen binding
- d) The positive cooperativity

Q11. which of the following is not a fibrous protein?

- a) Hair
- b) Wool
- c) Myoglobin
- d) Collagen

Q12. Which of the following statements about protein denaturation is true?

- a) Denaturation refers to the disruption of the primary structure of proteins.
- b) Denaturation can be performed by only one way
- c) Denaturation by heat is reversible
- d) Ribonuclease can be completely denatured by the actions of urea and mercaptoethanol

Q13. the major interaction responsible for the stability of myoglobin in its interior is:

- a) Hydrophilic
- b) Electrostatic interaction
- c) Disulfide bonding
- d) Hydrophobic interaction

Q14. A & beta, bluge is:

- a) A motif
- b) A reverse turn
- c) A nonrepetitive irregularity found in antiparallel beta-sheets.
- d) A nonrepetitive irregularity found in parallel & beta, -sheets.

Q15. in the amino acid sequence if collagen every third position must be occupied by:

- a) Proline
- b) Glycine
- c) Histidine
- d) Hydroxyproline

Q16. which statement is correct about myoglobin?

- a) Its oxygen binding is not affected by physiological changes in pH
- b) Its oxygen binding decreases on binding with 2,3-bisphoglycerat
- c) Exhibits positive cooperativity when oxygen to it
- d) Valine is present in its interior and binds the heme group

Q17. which of the following is considered as a globular protein ?

- a) Hair
- b) Keratin
- c) Ribonuclease
- d) Collagen

Q18. which of the following protein structures is stabilized by covalent bonds?

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

Q19. In the amino acid sequence of collagen every third position must be occupied by:

- a) Proline
- b) Glycine
- c) Hydroxylysine
- d) Hydroxyproline

Q20. Motifs represent:

- a) Primary structure of proteins
- b) Super-secondary structure of proteins
- c) Secondary structure of proteins
- d) Tertiary structure of proteins

Q21. Which of the following statements about enzymes is CORRECT?

- a) All enzymes have their highest activity at pH=7.0
- b) Most enzymes show decrease in activity at temperature more than 50°
- c) Enzymes increase the equilibrium constant of the reactions they catalyze.
- d) Enzymes decrease the standard free energy of the reactions they catalyze.

Q22. An enzyme in a urea solution of high concentration will:

- a) Lose its activity
- b) Have the highest activity
- c) Keep its native three-dimensional structure
- d) Be hydrolyzed completely

Q23. The main difference between myoglobin and hemoglobin molecules is:

- a) The positive cooperativity
- b) The presence of Fe(II)
- c) That histidine coordinates with oxygen molecule
- d) Oxygen molecule does not oxidize Fe(II)

Q24. Cooperative binding of oxygen by hemoglobin:

- a) Is induced by hemoglobin
- b) Is a result of different affinities for oxygen by each subunit protein.
- c) Is induced by oxygenation
- d) Is a result of interaction with myoglobin

Q25. Which of the following statements concerning collagen is CORRECT?

- a) Is a water soluble protein ✗
- b) Contains a good amount of small hydrophobic amino acids like Val. ✗
- c) Contains unusual amino acids such as proline ✓
- d) A collagen fiber consists of three polypeptide chains ✓

Q26. The oxygen binding affinity of hemoglobin decreases when there is a decrease in:

- a) Ionic strength
- b) 2,3-bisphosphoglycerate concentration ✗
- c) Carbon dioxide concentration
- d) pH ✓

Q27. Which of the following is a globular protein?

- a) hair
- b) Keratin
- c) Insulin ✓
- d) Collagen

Q28. Which of the following is a common nonrepetitive irregularity found in antiparallel β -sheets?

- a) A beta-bulge ✓
- b) An alpha-helix
- c) A greek key
- d) A reverse turn

Q29. Which of the following statements is CORRECT?

- a) Binding of O_2 to myoglobin exhibits positive cooperativity
- b) Increase in $[H^+]$ increases the affinity of O_2 to hemoglobin
- c) decrease in $[H^+]$ increases the affinity of O_2 to hemoglobin ✓
- d) decrease in $[H^+]$ decreases the affinity of O_2 to hemoglobin

Q30. Actively metabolizing muscle requires large amount of O_2 , therefore:

- a) they produce more H^+ ✓
- b) they produce less H^+
- c) they produce less CO_2
- d) the level BPD in blood is lowered

Q31. The tertiary structure of globular proteins is stabilized by:

- a) presence of nonpolar amino acids in the interior of protein
- b) presence of polar amino acids in the interior of the protein
- c) presence of nonpolar amino acids at the surface of the protein
- d) Covalent bonds between the side chains of adjacent (متجاورة) amino acids

Q32. Which of the following is NOT a weak interaction?

- a) Hydrogen bonds
- b) Disulfide bonds
- c) Ionic interactions
- d) Hydrophobic interaction

Q33. Modules represent:

- a) Primary structure of proteins
- b) Repeated supersecondary structure of proteins
- c) Secondary structure of proteins
- d) Tertiary structure of proteins

Q34. Which of the following statements concerning collagen is CORRECT?

- a) Is a water soluble protein
- b) Contains a good amount of small hydrophobic amino acids like Val.
- c) Contains unusual amino acids such as proline
- d) In its amino acid sequences, every third position must be occupied by glycine.

Q35. Hydrophobic amino acid sequences in myoglobin are responsible for:

- a) Covalent bonding to the heme prosthetic group
- b) The folding of the polypeptide chain
- c) The irreversible binding of oxygen
- d) Disulfide binds

Q36. Which of the following statements is INCORRECT?

- a) Binding of O₂ to hemoglobin exhibits positive cooperativity
- b) The shape of the O₂-binding curve for hemoglobin is sigmoidal
- c) decrease in [H⁺] increases the affinity of O₂ to hemoglobin
- d) decrease in [H⁺] decreases the affinity of O₂ to hemoglobin

Q37. Which of the following statements about hemoglobin (Hb) is true?

- a) Hb is a classic example of protein tertiary structure ✓
- b) Hb consists of four identical subunits ✗
- c) Hb does not bind CO₂ ✗
- d) Hb in the absence of BPG is not allosteric. ✗

Q38. approximately thirty three percent of amino acids composition of a polypeptide chain in collagen is:

- 33%
- a) Gly ✓
 - b) Val
 - c) Lys
 - d) Glu

Q39. Which of the following is not an example of supersecondary structure?

- a) Greek key ✓
- b) Type 1 reverse turn ✗
- c) $\beta \alpha \beta$ unit ✓
- d) β -meander ✓

Q40. Hemoglobin can bind to all of the followings except:

- a) Oxygen ✓
- b) Hydrogen ✗
- c) Carbon dioxide ✓
- d) BPG ✓

Q41. Which of the following statements about protein denaturation is true?

- a) Denaturation refers to the disruption of the primary structure of proteins.
- b) Denaturation can be performed by only one way
- c) Denaturation by heat is irreversible ✗
- d) Ribonuclease can be completely denatured only by the actions of mercaptoethanol ✗

Q42. to catalyze a reaction an enzyme must be :

- a) Not alter the equilibrium constant of the reaction
- b) Not bind to its substrate
- c) Increase the activation energy of the reaction
- d) Increase the rate of the reaction ✓

Q43. Which of the following is a fibrous protein?

- a) Ribonuclease A
- b) Hemoglobin
- c) Insulin
- d) Collagen

Q44. Which of the following marks a transition between one secondary structure and another?

- a) a beta-bulge
- b) a parallel beta-pleated sheet
- c) a greek key
- d) a reverse turn

Q45. Hemoglobin (Hb) has the following quaternary structure characteristics:

- a) Hb is a tetramer of four identical myoglobin subunits.
- b) Hb is a tetramer of four identical myoglobin-like subunits
- c) Hb is a tetramer composed of two identical subunits each with a myoglobin-like structure
- d) Hb is a tetramer of four different myoglobin-like subunits

Q46. The oxygen binding affinity of hemoglobin increases when:

- a) There is an increase in oxygen partial pressure
- b) 2,3-bisphosphoglycerate concentration increases
- c) Carbon dioxide concentration increases
- d) pH decreases

Q47. Which of the following is considered as a globular protein?

- a) Silk
- b) Ribonuclease
- c) Keratin
- d) Collagen

Q48. A repetitive supersecondary structure is:

- a) A motif
- b) A reverse turn
- c) A beta-bulge
- d) An antiparallel & beta-sheet

Q49. which of the following statements about collagen is CORRECT ?

- a) It consist of a left-handed single helix
- b) It consist of right handed single helix
- c) It consist of right handed triple helix
- d) Its soluble in water

Q50. Which of the following statements is CORRECT for fetal and maternal hemoglobins?

- a) Fetal hemoglobin binds 2,3 bisphosphoglycerate with a similar affinity to maternal hemoglobin
- b) Fetal hemoglobin binds 2,3 bisphosphoglycerate stronger than maternal hemoglobin
- c) Fetal hemoglobin binds oxygen weaker than maternal hemoglobin
- d) Fetal hemoglobin binds oxygen stronger than maternal hemoglobin

Q51. .wich of the following is not a fibrous protein?

- a) Hair
- b) Wool
- c) insulin
- d) Collagen

Q52. .which of the following protein structures is stabilized hydrogen bonds?

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

Q53. The amino acids..... and can constitute up to 30% of the residues in collagen.

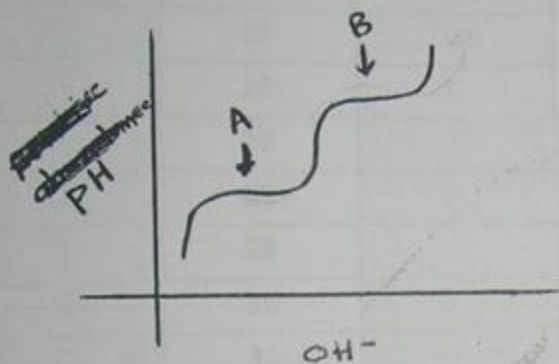
- a) Glycine & proline
- b) Glycine & hydroxyproline
- c) Hydroxylysine & hydroxyproline
- d) Proline & hydroxyproline

X, pro, Gly

Q54. A Motifs is:

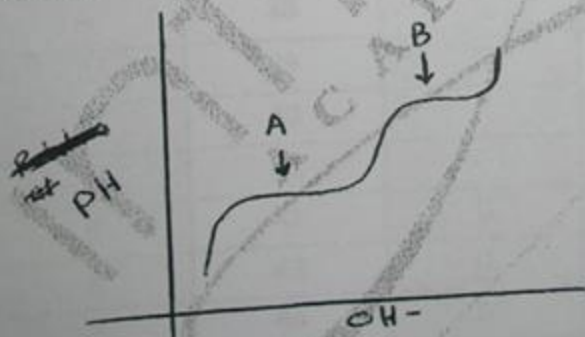
- a) Repetitive Primary structure.
- b) Repetitive Super-secondary structure.
- c) Repetitive Secondary structure
- d) Repetitive Tertiary structure.

Q55. The graph below shows a titration curve for a common biochemical compound. All the following statements about the graph are false EXCEPT:



- a) The compound requires two moles of NaOH to reach the end point.
- b) The compound could be a basic amino acid
- c) Point A is the isoelectric point of the compound.
- d) Points A and B represent the midway titration of basic and acidic groups respectively.

Q 56. The graph below shows a titration curve for a common biochemical compound. All the following statements about the graph are false EXCEPT:



- a) The compound has two inflection points
- b) The compound could be a basic amino acid
- c) Point A is the isoelectric point of the compound.
- d) Points A and B represent the midway titration of basic and acidic groups respectively.

Question	Answer	Question	Answer	Question	Answer
1	D	23	A	45	C
2	B	24	C	46	A
3	A	25	D	47	B
4	B	26	D	48	A
5	A	27	C	49	C
6	D	28	A	50	D
7	A	29	C	51	C
8	B	30	A	52	C
9	C	31	A	53	D
10	D	32	B	54	B
11	C	33	B	55	A
12	D	34	D	56	A
13	D	35	B		
14	C	36	D		
15	B	37	D		
16	A	38	A		
17	C	39	B		
18	A	40	B		
19	B	41	C		
20	B	42	D		
21	B	43	D		
22	A	44	D		