



Infinity Academy

# أكاديمية إنفينيتي

للتدريس الجامعي

noof odat

LECTURE

Biochemistry

SUBJECT

Chapter 3 Questions

LECTURERS

Dr.Tareq Jibril  
0799846784

PRICE

٥٠

PAGES

DATE

Date: ٢٠/٢/٢٠١٢

للتسجيل والإقتراحات

م. محمد الحجى : 0788 49 78 75  
للاستفسار عن المحاضرات 0796 144 290

Q1. A given amino acid has the following pKa values :  $\alpha$ -COOH= 2.15 ,  $\alpha$ -NH<sub>3</sub><sup>+</sup> = 8.95 , and side chain (RH<sup>+</sup>)= 10.53. then its P<sub>I</sub> Value is :

- a) 7.21
- b) 5.55
- c) 6.34
- d) 9.74 ✓

Q2. Which of the following is a pentapeptide?

- a) Carnosine. <sup>2</sup>
- b) Glutathione. <sup>3</sup>
- c) Oxytocin. <sup>9</sup>
- d) Enkephalin. <sup>5</sup> ✓

Q3. What is the net charge on the peptide : phe-Glu-Lys-Met at pH12?

- a) Zero
- b) +1
- c) -2 ✓
- d) +2

Q4. How many equivalents of OH<sup>-</sup> you need to completely titrate glutamic acid?

- a) 1
- b) 2
- c) 3 ✓
- d) 4

Q5. Which of the following amino acids has hydrophobic (non-polar) side chain ?

- a) Leu ✓
- b) Glu ✓
- c) Cys ✓
- d) Ser

Q6. During titration with a strong base glutamine can exist in :

- a) One ionic form
- b) Tow ionic forms
- c) Three ionic forms ✓
- d) Four ionic forms

Q7. The peptide bond, characterized by rigid motion in proteins, is formed between:

- a) The alpha-carboxyl group of one amino acid and the alpha-amino group of the next one.
- b) The alpha-carbon of one amino acid and the alpha-amino nitrogen of the next one.
- c) The alpha carbon and the alpha-amino nitrogen of the same amino acid.
- d) The alpha-carbon and the alpha-carboxyl carbon of the same amino acid.

Q8. How many inflection points are there in the titration curve of valine?

- a) 1
- b) 2
- c) 3
- d) 4



Q9. Which of the following amino acids has the largest side chain group?

- a) Valine
- b) Phenylalanine
- c) Tyrosine
- d) Tryptophan *2 ring*

Q10. Which of the following amino acid pairs are non-polar?

- a) Val and Asp
- b) Try and Arg
- c) Leu and Alanine
- d) Leu and Lys

Q11. Which of the following is an example of a sulfur-containing amino acid?

- a) Serine
- b) Methionine
- c) Tryptophane
- d) Aspartic acid

Q12. Which of the following is a cyclic peptide?

- a) Carnosine
- b) Glutathione
- c) Oxytocin
- d) Enkephalin

Q13. The isoelectric point of an amino acid is the point at which the molecule:

- a) Is polar with overall zero charge ✓
- b) Is polar with overall negative charge
- c) Is polar with an overall positive charge
- d) Is nonpolar

Q14. Which of the following statements about glutathione is NOT CORRECT?

- a) It contains a gamma-glutamyl residue ✓
- b) It acts as an oxidizing agent in the cell → anti ✓
- c) The reduced form has a -SH group ✓
- d) The oxidized form contains an S-S bond ✓

Q15. What is the net charge on the peptide: phe-Glu-Lys-Met at pH1?

- a) Zero
- b) +1
- c) -1
- d) +2 ✓

Q16. Which statement is NOT CORRECT about the peptide bond ?

- a) The peptide bond has partial double-bond character ✓
- b) The peptide bond is longer than the typical carbon-nitrogen bond ✓
- c) Rotation is restricted about the peptide bond ✓
- d) The carbonyl oxygen and the amide hydrogen are most often in a *trans* configuration with respect to one another ✓

Q17. For a given amino acid the  $pK_a$  of the alpha COOH group:

- a) Is higher than the  $pK_a$  of the alpha  $-NH_3^+$  group ✓
- b) Is lower than the  $pK_a$  of the alpha  $-NH_3^+$  group ✓
- c) Equals to the  $pK_a$  of the alpha  $-NH_3^+$  group
- d) Equals to the PI

Q18. How many inflection points are there in the titration curve of histidine? basic

- a) 1
- b) 2
- c) 3 ✓
- d) 4



Q19. Which of the following amino acids has a  $-CONH_2$  group in its side chain?

- a) Glutamine
- b) Glutamic acid
- c) Tyrosine
- d) Lysine

Q20. Which of the following amino acids is not chiral?

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

Q21. Which of the following amino acids is a precursor of Thyroxine?

- a) Tryptophan
- b) Threonine
- c) Tyrosine
- d) Lysine

Q22. Which of the following is a tripeptide?

- a) Carnosine
- b) Glutathione
- c) Oxytocin
- d) Enkephalin

Q23. what is the net charge on the peptide:  $Trp-His-Asp-Ala$  at pH 12?

- a) Zero
- b) +1
- c) -1
- d) -2

Q24. How many inflection points are there in the titration curve of alanine?

- a) 1
- b) 2
- c) 3
- d) 4

Q25. Which of the following amino acids is a precursor of Thyroxine?

- a) Tryptophan
- b) Threonine
- c) Tyrosine
- d) Lysine

Q26. Which of the following amino acid pairs are polar?

- a) Val and Asp
- b) Arg and Glu
- c) Leu and Met
- d) Ile and Lys

Q27. During titration with a strong base asparagine can exist in :

- a) One ionic form
- b) Two ionic forms
- c) Three ionic forms
- d) Four ionic forms

Q28. Which of the following amino acids has hydrophobic (non-polar) side chain ?

- a) Val
- b) Glu
- c) Cys
- d) Ser

Q29. Which of the following amino acids is uncommon?

- a) Phenylalanine
- b) Tyrosine
- c) Valine
- d) Thyroxine

Q30. Which of the following is a hydrophobic substance?

- a) Alanine
- b) Ethanol
- c) Sucrose
- d) Benzene ✓

Q31. The hydroxyl group in hydroxyproline occurs at the :

- a)  $\gamma$  carbon
- b)  $\delta$  carbon
- c)  $\alpha$  carbon
- d)  $\beta$  carbon

carsonine  $\beta$

Q32. Oxidized glutathione contains:

- a) two peptide bonds
- b) four peptide bonds
- c) six peptide bonds
- d) three peptide bonds

Q33. What is the net charge on the tripeptide :Glu-Asp-Val at pH 7.0, if the pKa of NH<sub>2</sub> terminal = 10.1 and -COOH terminal = 2.3 ?

- a) 0
- b) -1
- c) -2
- d) +1

Q34. Which of the following is a small peptide?

- a) Insulin
- b) Alpha-Keratin
- c) Oxytocin
- d) Ribonuclease A

Q35. The peptide bond is planar as a result of :

- a) Presence of free N-terminal
- b) Resonance stabilization
- c) Presence of alpha-carbon atom
- d) Tertiary structure of the peptide

Q36. Which of the following amino acids has hydrophobic (non-polar) side chain ?

- a) Ala
- b) Glu
- c) Cys
- d) Ser

Q37. Which of the following amino acids does not occur in proteins?

- a) L-phenylalanine
- b) L-tyrosine
- c) L-Valine
- d) L-ornithine

Q38. Which of the following is a hydrophobic substance?

- a) Alanine
- b) Ethanol
- c) Sucrose
- d) Hexane

Q39. Which of the following is a hydrophilic substance?

- a) Hexane
- b) Acetone
- c) Fatty acid
- d) Cholesterol

Q40. Which of the following statement is correct about the dipeptide carnosine?

- a) It is manufactured as a drug
- b) It is composed of beta-Alanine-L-Histidine
- c) It is composed of alpha-Alanine-L\_Histidine
- d) It is composed of beta\_Alanine-D-Histidine

Q41. Glutathione is an important scavenger of oxidizing agents because it contains:

- a) Gly
- b) Cys
- c) Glu
- d) Met

Q42. What is the net charge on the tripeptide :Glu-Asp-Val at physiological pH if the pKa of NH<sub>2</sub> terminal = 10.1 and -COOH terminal = 2.3 ?

- a) 0
- b) -1
- c) -2
- d) +1



Q43. Amino acids have the zwitterionic structure:

- a) At their  $pI$
- b) At very high  $pH$
- c) When the molecule carries a net negative charge
- d) When the molecule carries a net positive charge

Q44. Which of the following amino acids has hydrophobic (non-polar) side chain ?

- a) ile
- b) Glu
- c) Cys
- d) Ser

Q45. During titration with a strong base Lysine can exist in :

- a) One ionic form
- b) Two ionic forms
- c) Three ionic forms
- d) Four ionic forms

Q46. Reduced glutathione contains:

- a) two peptide bonds
- b) four peptide bonds
- c) six peptide bonds
- d) three peptide bonds

Q47. What is the net charge on the tripeptide :Gln-Asp-Val at  $pH 11.0$ , if the  $pK_a$  of  $NH_2$  terminal =  $10.1$  and  $-COOH$  terminal =  $2.3$  ?

- a) 0
- b) -1
- c) -2
- d) +1

Q48. Which of the following is a peptide hormone:

- a) Enkephalin
- b) Alpha-Keratin
- c) Oxytocin
- d) Ribonuclease A

Q49. Which of the following amino acids is optically inactive?

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

Q50. Which of the following amino acids is aromatic?

- a) Proline
- b) Serine
- c) Tyrosine
- d) Arginine

Q51. A given amino acid has the following pKa values:  $\alpha$ -COOH=2.18,  $\alpha$ -NH<sub>3</sub>= 8.95, and side chain = 10.53. Then its PI value is:

- a) 5.56
- b) 9.74
- c) 7.22
- d) 6.36

Q52. Which of the following is a tripeptide?

- a) Carnosine
- b) Glutathione
- c) Oxytocin
- d) Enkephalin

Q53. What is the net charge on the peptide: [Phe-Glu-Lys-Met] at pH7?

- a) Zero
- b) +1
- c) -1
- d) +2

Q54. how many equivalents of OH<sup>-</sup> you need to completely titrate asparagines?

- a) 1
- b) 2
- c) 3
- d) 4

Q55. Which of the following is a cyclic amino acid with secondary nitrogen atom?

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

Q56. Which of the following amino acid is achiral?

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

Q57. An antibiotic peptide is:

- a) Glutathione
- b) Gramicidin S
- c) Enkephalin
- d) Oxytocin

Q58. Glutathione is an important scavenger of oxidizing agents because it contains:

- a) Gly
- b) Cys
- c) Glu
- d) Met

Q59. Which amino acids contain sulfur?

- a) Cysteine and lysine
- b) Cysteine and methionine
- c) Arginine and methionine
- d) Cysteine and Isoleucine

Q60. For a given amino acid the  $pK_a$  of the  $\alpha$ - $NH_3^+$  group:

- a) Is higher than the  $pK_a$  of the  $\alpha$ -COOH group
- b) Is lower than the  $pK_a$  of the  $\alpha$ -COOH group
- c) Equals to the  $pK_a$  of the  $\alpha$ -COOH group
- d) Equals to the PI

Q61. What is the net charge on the peptide : Phe-His-Asp-Lys at pH12?

- a) Zero
- b) +1
- c) -2
- d) +2

b c

Q62. A given amino acid has the following pKa values:  $\alpha$ -COOH=2.15,  $\alpha$ -NH<sub>3</sub><sup>+</sup>= 8.95, and side chain(RH) = 3.85. Then its PI value is:

- a) 5.55
- b) 3.00
- c) 4.98
- d) 6.40

5.55  
3.00  
4.98  
6.40

Q63. Which of the following is a dipeptide?

- a) Carnosine
- b) Glutathione
- c) Oxytocin
- d) Enkephalin

Q64. What is the net charge on the peptide : Phe-Glu-Lys-Met at pH1?

- a) Zero
- b) +1
- c) -1
- d) +2

Q65. which of the following amino acids has one isomer?

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

Q66. Which of the following amino acid is aromatic?

- a) Proline
- b) Serine
- c) Tyrosine
- d) Arginine



Question	Answer	Question	Answer	Question	Answer
1	D	23	D	45	D
2	D	24	B	46	A
3	C	25	C	47	C
4	C	26	B	48	C
5	A	27	C	49	B
6	C	28	A	50	C
7	A	29	D	51	B
8	B	30	D	52	B
9	D	31	A	53	A
10	C	32	B	54	B
11	B	33	C	55	A
12	C	34	C	56	B
13	A	35	B	57	B
14	B	36	A	58	B
15	D	37	D	59	B
16	B	38	D	60	A
17	B	39	B	61	C
18	C	40	B	62	B
19	A	41	B	63	A
20	B	42	C	64	D
21	C	43	A	65	B
22	B	44	A	66	C