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NPTEL

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Unit 4 - Week 2

Register for Certification exam

Course outline

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Week 2

- Lecture 07 : Amino Acids and Their Properties
- Lecture 08 : Amino Acid Titrations
- Lecture 09 : pI Determination of Glycine
- Lecture 10 : pI Determination of Lysine
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Assignment 2

The due date for submitting this assignment has passed. **Due on 2019-02-13, 23:59 IST**
As per our records you have not submitted this assignment.

1) A pair of amino acids containing non-polar and aliphatic side chains is *1 point*

a. Phenylalanine, tyrosine
b. Alanine, leucine
c. Lysine, arginine
d. Serine, threonine

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

2) *1 point*

The pair of amino acids, both of which are expected to have a net negative charge at pH 7.

a. Glu and Asp
b. Gln and Asp
c. Glu and Asn
d. Gln and Asn

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

3) pH at which amino acids do not migrate in an electric field is called *1 point*

a. Pro-electric point
b. Ionization point

Solution

c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

4) Which of the following is an imino acid? *1 point*

a. Ala
b. Pro
c. Leu
d. Ile

a.

b.

c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

5) Number of chiral centers in isoleucine and leucine are *1 point*

a. 1 and 2 respectively
b. 2 and 1 respectively
c. 2 and leucine is achiral
d. Both are achiral

a.

b.

c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

6) The pI of an amino acid having the first pK_a at 2.34 and second pK_a at 9.60 is *1 point*

a. 7.26
b. 3.63
c. 11.94
d. 5.97

a.

b.

c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

7) *1 point*

Tyr and Trp are less hydrophobic than Phe because

a. Phe sidechain has phenol group in it
b. Phe sidechain has no polar groups attached to it
c. Tyr and Trp have similar side chains
d. Phe sidechain has indole group attached to it

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

8) ***1 point***

When the amino acid alanine (R-group is CH3) is added to a solution with a pH of 7.3, alani becomes

a. Positively charged
b. Negatively charged
c. A zwitterion
d. Partially positive charged

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

9) ***1 point***

When NaOH is added to a solution of Lys drop wise, the number of inflexion point(s) [sharp change pH] obtained is/are:

a. 1
b. 2
c. 3
d. 4

- a.
- b.
- c.
- d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

10) Which of these amino acids have pI close to that of physiological pH ***1 point***

a. Asn
b. Ser
c. His
d. Gln

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

11) **1 point**

The pKa's of arginine's α-Carboxyl group, α-Amino group and side chain are 1.8, 9.0 and 12 respectively. The isoelectric point for Arg is

a. 12.5
b. 10.75
c. 9.0
d. 7.76

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

12) **1 point**

During pH metric titration of glycine with NaOH, certain amount of HCl is added at the beginning. T role of HCl is to

a. Neutralize NaOH
b. Neutralize glycine
c. Completely protonate glycine
d. Converts glycine to zwitterionic form

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

13) **1 point**

The pKa2, i.e. pKa for the sidechain, of His is 6.0 when it is present in isolated state. Consid a specific protein with His at its active site, the pKa2 is expected to be:

a. Greater than 6 if the active site has more +ve charges
b. Less than 6 if the active site has more +ve charges
c. Less than 6 if the active site has more -ve charges
d. Same like isolated His, that is 6.0

a.
b.
c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

14) **1 point**

During titration of Gly with NaOH, before and after the first inflection point, the chang in very slow due to

a. The formation of buffer zone
b. The slow deprotonation of Gly
c. The degradation of Gly in the medium
d. Consumption of NaOH by HCl present in the medium

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

15) **1 point**

Titration of Arg residue present in a protein is difficult to carry out with NaOH unlike indivi Arg since

a. Protein forms complex with NaOH
b. Multiple amino acids may make the process complex
c. The structure of protein may degrade at higher pH
d. All of the above

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.
c.

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