Unit 3 - Week 1

Course outline

How does an NPTEL online course work?

Week 0 Assignment 0

Week 1

- Lecture 01 : Amino Acids - I
- Lecture 02 : Amino Acids - II
- Lecture material of Week 1
- **Quiz : Week 1 Assignment 1**
- Week 1 Feedback Form

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

Week 12

Download Videos

Detail Solution

Live Interactive Session

Week 1 Assignment 1

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-02-12, 23:59 IST.

1) The R group of a hydrophobic amino acid contains in its side – chain *1 point*

a) carbon, hydrogen and nitrogen atoms
b) carbon and hydrogen atoms
c) carbon, hydrogen and oxygen atoms
d) carbon, hydrogen and sulfur atoms

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
b)

2) Which of the following units are repeatedly joined together to form a strand of DNA? *1 point*

a) amino acids
b) nucleotides
c) fatty acids
d) monosaccharides

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
b)

3) Of the 20 standard amino acids, only ___________ is not optically active. The reason is that its side chain ___________. *1 point*

a) alanine; has only a methyl group
b) glycine; has a hydrogen atom
c) glycine; is unbranched
d) proline; forms a covalent bond with the amino group

○ a.
○ b.
○ c.
○ d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

4) The strong conclusion from Anfinsen's work on Ribonuclease A was that *1 point*

a) disulfide bonds (S-S) in proteins can be reduced *in vitro*.
b) the -SH groups of cysteine are not found *in vivo*.
c) the native conformation of a protein is adopted spontaneously.
d) irreversible denaturation of proteins violates the "Thermodynamic Hypothesis".

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
c)

5) Humans, have the machinery to synthesize cysteine from two other amino acids namely -------- and serine. *1 point*

a) methionine
b) selenocysteine
c) citrulline
d) hydroxyproline

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
a)

6) Isoleucine is derived from -------. *1 point*

a) methionine
b) lysine
c) threonine
d) leucine

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
c)

7) Which stereoisomer is most prevalent for any amino acid present in proteins? *1 point*

a) Both D- and L-forms
b) L-form
c) D-form
d) None of the above

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
b)

8) Roughly how many amino acids are present in one turn of a regular α helix? *1 point*

a) 2.8
b) 3.6
c) 4.2
d) 10

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
b)

9) The repeating structural unit in a multimeric protein is known as a(n): *1 point*

a) domain.
b) motif.
c) oligomer.
d) protomer.

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
d)

10) The molecular formula for glycine is $C_2H_5O_2N$. What would be the molecular formula for a linear oligomer made by linking ten glycine molecules together by condensation synthesis? *1 point*

a) $C_{20}H_{50}O_{20}N_{10}$.
b) $C_{20}H_{32}O_{11}N_{10}$.
c) $C_{20}H_{40}O_{10}N_{10}$.
d) $C_{20}H_{68}O_{29}N_{10}$.

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
b)

11) The uncommon amino acid selenocysteine has an R group with the structure $—CH_2—SeH$ ($pKa \approx 5$). In an aqueous solution, pH = 7.0, selenocysteine would *1 point*

a) be a fully ionized zwitterion with no net charge.
b) be found in proteins as D-selenocysteine.
c) never be found in a protein.
d) be non-ionic.

○ a.
○ b.
○ c.
○ d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

12) What effect would converting a glutamic acid to γ-carboxyglutamate have on the overall charge of the protein at pH 7.0? *1 point*

a) It will become more negative
b) It will become more positive.
c) It will stay the same.
d) There is not enough information to answer the question.

○ a.
○ b.
○ c.
○ d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

13) The greatest buffering capacity at physiological pH would be provided by protein rich in which of the following amino acids? *1 point*

a) Serine
b) Cysteine
c) Alanine
d) Histidine

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
d)

14) You are given a mixture that contains glutamic acid ($pI = 3.2$), arginine ($pI = 10.8$), and valine ($pI = 6.0$), and you subject the mixture to an electric field (electrophoresis). Which amino acids migrate towards the cathode when the electrophoresis is carried out at a pH of 7.1? *1 point*

a) Glutamic acid
b) Arginine
c) Valine
d) Both glutamic acid and valine

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
b)

15) Which parts of the amino acid involve in hydrogen bond formation *1 point*

a) -C=O and C=O
b) -C=O and $-NH_3$
c) $-NH_3$ and NH_3
d) R group and R group

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
b)