Unit 4 - Week 2

Course outline

How does an NPTEL online course work?

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Week 2 Assignment 2

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) In the Kyte Doolittle Hydrophobicity scale, which group of amino acid residues is most likely to have a negative value. *1 point*

a) Gly, Leu, Ile
b) Glu, Asp, Lys
c) Ala, Met, Cys
d) Leu, Val, Ile

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
b)

2) Aquaporins are a type of proteins that are present in the plasma membranes of many cells for water transport. On the other hand, HSA proteins are found in human blood plasma. Based on their location, what tertiary structure would these two proteins most likely adopt? *1 point*

a) Aquaporins have a hydrophobic surface with a hydrophilic core, while HSA has a hydrophilic surface with a hydrophobic core.
b) Aquaporins have a hydrophobic surface with a hydrophobic core, while HSA has a hydrophilic surface with a hydrophilic core.
c) Aquaporins have a hydrophobic surface with a hydrophilic core, while HSA has a hydrophobic surface with a hydrophilic core.
d) Aquaporins have a hydrophilic surface with a hydrophobic core, while HSA has a hydrophobic surface with a hydrophilic core

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
a)

3) In globular proteins, the amino acid residues K, D, E, R are likely to be present *1 point*

a) in the interior
b) on the surface
c) on the surface-lipid anchor
d) in the Hydrophilic core.

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
b)

4) Which of the following types of non-covalent bonds or interactions is thought to be primarily responsible for the secondary structure of a protein? *1 point*

a) Ionic interaction
b) Hydrogen bonds
c) van der Waals Interactions
d) Hydrophobic Interactions

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
b)

5) Suppose a tripeptide sequence is written as **HIP**. Which among the following statement is **CORRECT**? *1 point*

a) It has Proline at the N-terminus and Histidine at the C-terminus.
b) It has Phenylalanine at theN-terminus and Histidine at the C-terminus.
c) It has Proline at theC-terminus and Histidine at the N-terminus.
d) It has Phenylalanine at theC-terminus and Histidine at the N-terminus.

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
c)

6) β sheets are examples of __________ structure of proteins. *1 point*

a) primary
b) secondary
c) tertiary
d) quaternary

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
b)

7) Identify the form of non-covalent bond or interaction that is most likely to be formed involving the side chain residues Arginine and Glutamic acid. *1 point*

a) Ionic or electrostatic
b) Hydrogen bond formation
c) van der Waals interaction
d) Hydrophobic interaction

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
a)

8) Glycine and Proline are most likely to be present in *1 point*

a) an α-helix
b) a β-strand
c) turns
d) both helices and strands

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
c)

9) The Ramachandran plot is a plot of the dihedral angles of the amino acid residues contained in a peptide. Which two dihedral angles of the peptide backbone are they? *1 point*

a) phi (φ) and psi (ψ)
b) phi (φ) and omega (ω)
c) omega (ω) and psi (ψ)
d) psi (ψ) and omega (ω)

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
a)

10) The two amino acids having R groups with a net negative charge at pH 7.0 are *1 point*

a) Aspartate and glutamate
b) Arginine and histidine
c) Cysteine and methionine
d) Asparagine and glutamine

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
a)

11) The isoelectric point (*pI*) of a protein is – *1 point*

a) The pH at which the net charge of the protein is zero.
b) The pH at which the net charge of the protein is negative.
c) The pH at which all the carboxylic groups of the protein are uncharged.
d) The pH at which all the amino groups of the protein are uncharged.

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
a)

12) Antiparallel β-strands are more stable than parallel β-strands because – *1 point*

a) Antiparallel β-strands have more number of disulfide bonds.
b) Antiparallel β-strands are stabilized by van der Waals forces.
c) Antiparallel β-strands have stronger hydrogen bonds.
d) Antiparallel β-strands are stabilized by hydrophobic interactions.

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
c)

13) In sickle cell anaemia, the red blood cells become rigid and sticky and are shaped like sickles or crescent moons. This happens due to *1 point*

a) the change of a single amino acid residue in the haemoglobin sequence.
b) the over production of haemoglobin.
c) a new peptide sequence gets incorporated in the haemoglobin sequence.
d) the unfolding of a subunit of haemoglobin.

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
a)

14) A tetrameric protein **ALWAYS** has *1 point*

a) four identical subunits
b) four subunits
c) four dissimilar subunits
d) two each of different subunits (eg. $\alpha_2\beta_2$)

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
b)

15) Which of the following statement is **TRUE** for the side chain residues of the amino acids in an α-helix? *1 point*

a) They are projected towards the inside of the helix spiral.
b) They are found on the outside of the helix spiral.
c) They alternate between the outer and the inner regions of the helix spiral.
d) They do not have any role in the formation of helices.

○ a)
○ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
b)