

Unit 2 - Week-1: Basics of proteins and proteomics

Course outline

How to access the portal ?

Week-1: Basics of proteins and proteomics

- L1. Introduction to amino acids
- L2. Introduction to proteins
- L3. Protein folding & misfolding
- L4. Introduction to proteomics
- L5. Lab session – Protein-protein interaction using label-free biosensors
- Download Videos
- Weekly Feedback
- Quiz : Week-1 Assignment
- Assignment-1 Solutions

Week-2: Gel-based proteomics

Week-3: Two-dimensional gel electrophoresis (2-DE)

Week-4: Difference in gel electrophoresis (DIGE) & Systems Biology

Week-5: Basics of mass spectrometry

Week-6: Basics of mass spectrometry and sample preparation

Week-7: Quantitative Proteomics

Week-8: Advancement in Proteomics

Text Transcripts

Week-1 Assignment

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

Due on 2019-09-11, 23:59 IST.

Week-1 Assignment

1) Which of the following amino acid is having no free amino group? 1 point

- Isoleucine
 Proline
 Histidine
 Valine

No, the answer is incorrect.
Score: 0

Accepted Answers:
Proline

2) Which pair of amino acids contain Sulphur atom in them? 1 point

- Histidine and Lysine
 Lysine and Cysteine
 Methionine and Cysteine
 Glutamine and Methionine

No, the answer is incorrect.
Score: 0

Accepted Answers:
Methionine and Cysteine

3) Myoglobin and hemoglobin are two important globular proteins. Which of the following statement is true about myoglobin and subunits of hemoglobin? 1 point

- Both have similar tertiary structures, but different primary structures
 Both are very different in primary and tertiary structures
 Both have very identical primary and tertiary structures
 Both have similar primary structures, but different tertiary structures

No, the answer is incorrect.
Score: 0

Accepted Answers:
Both have similar tertiary structures, but different primary structures

4) α -Keratin is a structural protein found in vertebrates. It is rich in which of the following amino acids? 1 point

- Glutamate
 Cysteine
 Proline
 Glycine

No, the answer is incorrect.
Score: 0

Accepted Answers:
Cysteine

5) Anfinsen's experiments on denaturation and renaturation of the enzyme Ribonuclease shows that: 1 point

- The primary sequence of the enzyme is sufficient to determine its secondary and tertiary structure
 Native state of ribonuclease does not have a unique secondary and tertiary structure
 The completely unfolded enzyme, with all disulfide bonds broken, is still enzymatically active
 None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
The primary sequence of the enzyme is sufficient to determine its secondary and tertiary structure

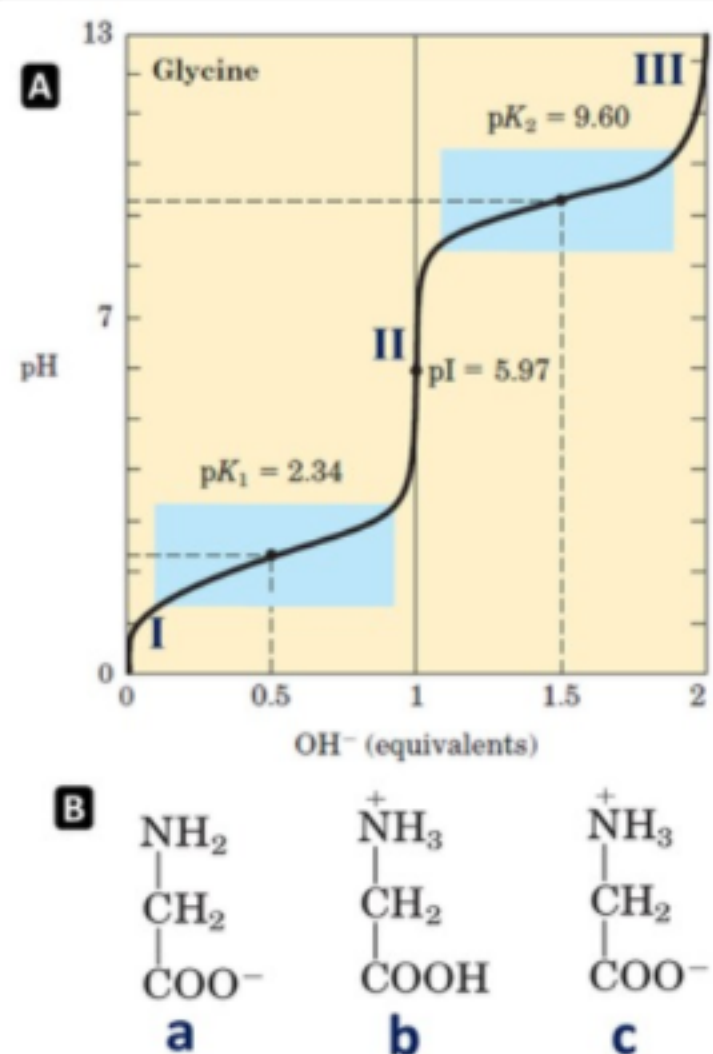
6) Alzheimer's disease is a neurodegenerative disorder caused by errors during protein folding. Which of the following is/are the major observation(s) in this disorder? 1 point

- Presence of beta-amyloids
 Presence of alpha helices in clusters
 Shrinkage of brain structures and collapsing of microtubules
 Sinuses filled with mucus

No, the answer is incorrect.
Score: 0

Accepted Answers:
Presence of beta-amyloids
Shrinkage of brain structures and collapsing of microtubules

7) Figure given below shows the titration curve for diprotic form of glycine and predominant form of glycine at different pH during titration. The plot corresponds to the deprotonation of two different groups on glycine. 0 points



Based on the information provided which of the following match is correct for the key points I to III during titration (highlighted in the figure A) and respective predominant species of the amino acid (B)?

- a- I, b- II and c- III respectively
 b- I, a- II and c- III respectively
 c- I, b- II and a- III respectively
 c- I, a- II and b- III respectively

No, the answer is incorrect.
Score: 0

Accepted Answers:
c- I, b- II and a- III respectively

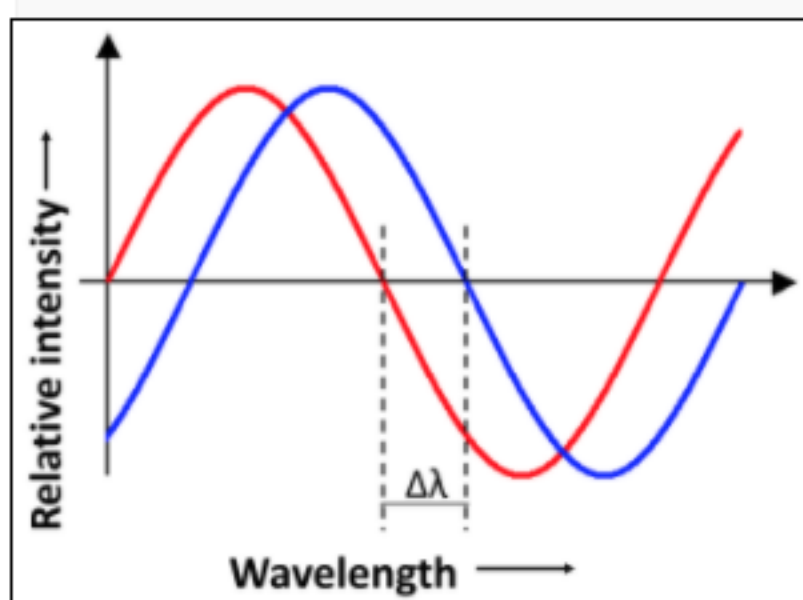
8) Protein folding is an important process for acquiring the native confirmation of proteins. Which of the following happens during the folding of proteins? 1 point

- Polar amino acid side chains tends to come towards outside
 Non-polar side chains comes towards outside whereas polar side chains bury to the inner side of the protein
 Two proteins of same length will acquire identical folding irrespective of their primary structure
 Amino acids in a protein interact with each other to produce a well-defined three-dimensional structure

No, the answer is incorrect.
Score: 0

Accepted Answers:
Polar amino acid side chains tends to come towards outside
Amino acids in a protein interact with each other to produce a well-defined three-dimensional structure

9) A label free technique used for studying protein interactions is based on the principle "that if there is any change in the number of bound molecules, there will be a shift in the interference pattern". The shift is represented by $\Delta\lambda$ as shown in figure below. This explanation and the results obtained as below hold true for which of the following technique? 1 point



- Bio-Layer interferometry
 Surface Plasmon resonance
 Electromagnetic interference
 Microcantilevers

No, the answer is incorrect.
Score: 0

Accepted Answers:
Bio-Layer interferometry

10) For which of the following pair of ionisation techniques, the inventers were awarded noble prize? 1 point

- Photoionisation and Electrospray ionisation
 MALDI and Electrospray Ionisation
 MALDI and Chemical ionisation
 Fast atom bombardment ionisation and Photoionisation

No, the answer is incorrect.
Score: 0

Accepted Answers:
MALDI and Electrospray Ionisation