Unit 9 - Structure determination of molecules

Week 7 Assignment

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

1. What is the typical chemical shift range of alpha protons of amino acids in proteins and peptides?

   - 1.5 - 3.5 ppm
   - 3.5 - 5.5 ppm
   - 5.5 - 7.5 ppm
   - 7.5 - 9.5 ppm

   No, the answer is incorrect. Score: 0
   Accepted Answer: 3.5 - 5.5 ppm

2. Which of the following pairs of experiments are used for sequence-specific resonance assignment of peptides?

   - 2D NOESY and 2D ROESY
   - 2D TOCSY and 2D NOE
   - 2D TOCSY and 2D NOESY
   - 2D NOE and 2D NOE

   No, the answer is incorrect. Score: 0
   Accepted Answer: 2D TOCSY and 2D NOESY

3. Which of the following two amino acids have similar spin system in 2D TOCSY?

   - Glycine and Serine
   - Valine and Leucine
   - Phenylalanine and Tyrosine
   - Glutamine and Alanine

   No, the answer is incorrect. Score: 0
   Accepted Answer: Phenylalanine and Tyrosine

4. A number of protons of peptides, the following three steps are involved. Arrange them in the right sequence in which they are carried out:

   a. Identify resonances for each amino acid and (open system identification)
   b. Assign the structure of the peptide
   c. Assign the amino acid sequence according to their amino acid sequence
   d. Obtain nuclear Overhauser effect (NOE) and cross peaks
   e. Through the NOE, assign the proton of another peptide
   f. Obtain NOE data

   No, the answer is incorrect. Score: 0
   Accepted Answer: f, d, a, c

5. How many cross peaks will be observed along a 1H trace strip of alanine?

   - 1, 2
   - 1, 2, 3
   - 2, 3
   - 3

   No, the answer is incorrect. Score: 0
   Accepted Answer: 1, 2

6. Which of the following is used for detecting the presence of hydrogen bonds in a peptide?

   - Amide proton chemical shift
   - Chemical shift
   - Amide proton decoupling exchange
   - NOESY cross peaks from amide proton to other protons

   No, the answer is incorrect. Score: 0
   Accepted Answer: Amide proton decoupling exchange

7. Which of the following is information obtained from NMR is useful in distinguishing alpha helix from beta-sheets?

   - Hydrogen bond
   - Three bond J-coupling between alpha proton and alpha H of amino acids
   - Three bond J-coupling between alpha amino and beta protons of amino acids
   - Cross peaks in 2D NOE spectrum between amide to side-chains

   No, the answer is incorrect. Score: 0
   Accepted Answer: Cross peaks in 2D NOE spectrum between amide to side-chains

8. Which of the following is not true about NMR based protein structure determination?

   - NMR can be used for the determination of the structure and dynamics of proteins
   - Sequence specific assignment of amino acids cannot be done with NMR
   - NMR gives more than one possible protein structure
   - Hydrogen bonded residues can be probed by NMR

   No, the answer is incorrect. Score: 0
   Accepted Answer: Hydrogen bonded residues can be probed by NMR

9. Which of the following information is needed to begin resonance assignment of a peptide?

   - The amino acid sequence of the peptide
   - The molecular weight of the peptide
   - The types of secondary structure present in the peptide
   - The function of the peptide

   No, the answer is incorrect. Score: 0
   Accepted Answer: The amino acid sequence of the peptide

10. A dipeptide AB has two NOE peaks and two cross peaks along NOE. (a) two cross peaks at 4.25 ppm and 5.39 ppm and (b) has a cross peaks at 4.50 ppm, 2.11 ppm, 12.15 ppm and 3.59 ppm. Identify amino acids A and B

   - Glycine and Asparagine
   - Alanine and Valine
   - Valine and Glutamine
   - Leucine and Alanine

   No, the answer is incorrect. Score: 0
   Accepted Answer: Alanine and Valine