# 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.**

**Due on 2020-03-18, 23:59 IST.**

1) What is the typical chemical shift range of alpha proton of amino acids in proteins and peptides? *1 point*

- 1.5 – 3.5 ppm
- 3.5 – 5.5 ppm
- 5.5 – 7.5 ppm
- 7.5 – 02.5 ppm

No, the answer is incorrect.
Score: 0
Accepted Answers:
*3.5 – 5.5 ppm*

2) Which of the following pairs of experiments are used for sequence specific resonance assignment of peptides? *1 point*

- 2D ROESY and 2D NOESY
- 2D NOESY and 2D HSQC
- 2D TOCSY and 2D NOESY
- 2D COSY and 2D NOESY

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

3) Which of the following two amino acids have similar spin system in 2D TOCSY? *1 point*

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

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

4) In resonance assignments of peptides, the following three steps are involved. Arrange them in the right sequence in which they are carried out: *1 point*
1. Identify resonances for each amino acid (spin system identification)
2. Solve the structure of the peptide
3. Arrange assignment according to their amino acid sequence

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

No, the answer is incorrect.
Score: 0
Accepted Answers:
*1, 3, 2*

5) How many cross peaks will be observed along a NH tocsy strip of alanine? *1 point*

- 1
- 2
- 3
- 4

No, the answer is incorrect.
Score: 0
Accepted Answers:
*2*

6) Which of the following is used for detecting the presence of hydrogen bonds in a peptide *1 point*

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

No, the answer is incorrect.
Score: 0
Accepted Answers:
*Amide proton deuterium exchange*

7) Which of the following information obtained from NMR is useful in distinguishing alpha helix from beta-sheets *1 point*

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

No, the answer is incorrect.
Score: 0
Accepted Answers:
*Three bond J-coupling between amide proton and alpha-H of amino acids*

8) Which of the following is not true about NMR based protein structure determination *1 point*

- 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 Answers:
*Sequence specific assignment of amino acids cannot be done with NMR*

9) Which of the following information is needed to begin resonance assignment of a peptide? *1 point*

- 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 Answers:
*The amino acid sequence of the peptide*

10) A di-peptide AB has two NH peaks and tocsy strips along NH(A) has 2 cross peaks at 4.35ppm and 1.39ppm and NH(B) has 4 cross peaks at 4.18ppm, 2.13ppm, 0.97ppm and 0.94ppm. Identify amino acids A and B *1 point*

- Glycine and Alanine
- Alanine and Valine
- Valine and Glycine
- Leucine and Alanine

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