# Unit 2 - Week 0 Assignment



## Week 0 Assignment

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.

Which of the following physical property is probed in NMR spectroscopy? *1 point*

- Electron magnetic moment
- Nuclear charge
- Nuclear magnetic moment
- Electronic charge

No, the answer is incorrect.
Score: 0
Accepted Answers:
Nuclear magnetic moment

In the electromagnetic spectrum, which of the following has the lowest frequency? *1 point*

- Micro-waves
- Radio waves
- Infra-red waves
- Ultra-violet waves

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

In the absence of an external magnetic field *1 point*

- Nuclear spin energy levels are degenerate
- Nuclear spin energy levels are not degenerate
- Nuclear spin energy levels are split into two
- Splitting of nuclear spin energy levels never occur

No, the answer is incorrect.
Score: 0
Accepted Answers:
Nuclear spin energy levels are degenerate

How many energy levels does a spin 1 nucleus have in an external magnetic field? *1 point*

- 1
- 2
- 3
- 4

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

Which of the following interaction causes the excitation from the lower energy level to the higher energy level in NMR? *1 point*

- Interaction between the magnetic moment of nuclei and magnetic component of radio waves
- Interaction between the magnetic moment of nuclei and the electric component of radio waves
- Interaction between the electric charge of nuclei and magnetic component of radio waves
- Interaction between the electric charge of nuclei and the electric component of radio waves

No, the answer is incorrect.
Score: 0
Accepted Answers:
Interaction between the magnetic moment of nuclei and magnetic component of radio waves

In the presence of an external magnetic field *1 point*

- A difference in population is created between lower and higher spin energy levels
- The difference in population is made zero between lower and higher spin energy levels
- There is no net magnetization created in the sample
- Excitation happens from lower to higher spin energy levels

No, the answer is incorrect.
Score: 0
Accepted Answers:
A difference in population is created between lower and higher spin energy levels

Under equilibrium conditions, in which direction does the net magnetization of spins point toward? *1 point*

- XY plane
- –Z axis
- + Z axis
- X Axis

No, the answer is incorrect.
Score: 0
Accepted Answers:
+ Z axis

Which of the following conditions will tend to equalize the population between the lower and upper energy states in NMR *1 point*

- Increasing the temperature
- Increase in the Magnetic field ($B_0$)
- Decreasing the Temperature ($T_0$)
- Increasing the gyromagnetic ratio of the nuclei

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

Which of the following will not cause any change in the sensitivity of an NMR experiment if all other parameters are kept constant? *1 point*

- Increasing the external magnetic field
- Increasing the temperature
- Reducing the temperature
- Keeping the external field constant

No, the answer is incorrect.
Score: 0
Accepted Answers:
Keeping the external field constant

In which direction is the RF pulse applied? *1 point*

- Along –z
- Along +z
- Along x or y
- In any random direction

No, the answer is incorrect.
Score: 0
Accepted Answers:
Along x or y