Lecture 4 Quiz

Started: Apr 14 at 9:25pm

Quiz Instructions

Choose the best answer for each question. You may look back at lectures and notes.

Question 1	**1 pts**

F and Z are coefficients for

○ Neither of these

○ Longitudinal and Transverse bases, respectively

○ Transverse and Longitudinal bases, respectively

Question 2	**1 pts**

If the non-zero EPG coefficients are $F^-_2 = i$ the equivalence magnetization is

○ $M_x = \cos(4\pi z)$, $M_y = -\sin(4\pi z)$

○ $M_x = -\sin(4\pi z)$, $M_y = -\cos(4\pi z)$

○ $M_x = \sin(4\pi z)$, $M_y = \cos(4\pi z)$

○ $M_x = \cos(4\pi z)$, $M_y = +\sin(4\pi z)$

Question 3

1 pts

On EPG F and Z coefficients, the effect of relaxation (with E1 and E2 defined as previously) is to

○ None of these

○ Attenuate all F states by E2, all Z states by E1

○ Attenuate all F states by E2, all Z states by E1, and add (1-E1) to Z0

○ Attenuate all F states by E2, all Z states by E1, and add (1-E1) to all Z states

Question 4

1 pts

The effect of a *negative* unit gradient on a non-zero state F^+_1 is to

○ Refocus the magnetization to F0

○ None of these

○ Mix magnetization between states of order 1

○ Dephase the magnetization to a 2nd-order state

Question 5

1 pts

The rotation matrix due to precession in EPG takes the form

○ R = [exp(iθ) exp(-iθ) exp(iθ)] (transpose)

○ R = [exp(iθ) exp(iθ) 1] (transpose)

○ None of these

○ R = [exp(iθ) exp(-iθ) 1] (transpose)

Question 6   1 pts

If $Z_2 = 0.25 + 0.25i$ then the longitudinal magnetization is

○ $0.5\cos(2\pi z) - 0.5\sin(2\pi z)$

○ $0.5\cos(2\pi z) + 0.5\sin(2\pi z)$

○ $0.25\cos(2\pi z) - 0.25\sin(2\pi z)$

○ $0.25\cos(2\pi z) + 0.25\sin(2\pi z)$

Question 7   1 pts

When magnetization passes from F^+ states to F^-, then is refocused subsequently without passing through a Z state, this is

○ a stimulated echo

○ both spin echo and stimulated echo

○ gradient spoiling

○ a spin echo

Question 8   1 pts

When dephrased magnetization passes through a Z state, and is subsequently refocused, this is

○ a spin echo

○ both a spin echo and a stimulated echo

○ gradient spoiling

○ a stimulated echo

Question 9

1 pts

To generate 2 cycles of twist in magnetization from an F_0 state you can

○ apply a unit gradient and an RF pulse

○ apply 2 unit gradients

○ apply 2 RF pulses

○ apply 2 RF pulses and a unit gradient

Question 10

1 pts

The transverse EPG basis functions are best described as

○ integer numbers of positive and negative twists (transverse magnetization) and integer numbers of sine/cosine cycles (longitudinal magnetization)

○ integer numbers of negative twists (transverse magnetization) and integer numbers of sine/cosine cycles (longitudinal magnetization)

○ integer numbers of positive twists (transverse magnetization) and integer numbers of sine/cosine cycles (longitudinal magnetization)

○ integer numbers of positive and negative twists (transverse magnetization) and integer numbers of cosine cycles (longitudinal magnetization)

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