General Physics - E&M (PHY 1308) Lecture Notes

Quiz009

SteveSekula, 4 November 2010 (created 4 November 2010)

no tags

Name:_____

Date:_____

Rules for the Quiz:

- You are given **5 minutes at the beginning** to look over the quiz quietly and jot some notes on a 3x5-inch notecard. Use this time to think about how to attack the quiz problem(s)
- You are given **20 minutes in the middle** to discuss the quiz with your teammates. Use this time to develop strategies across the group for attacking the problem(s). You are allowed to keep notes from this discussion on the SAME 3x5-inch notecard.
- You then have **20 minutes at the end** to work individually (NO MORE DISCUSSION) to solve the problem(s). Use your notes on the 3x5-inch card to help you attack the problem(s)
- You are allowed to use a calculator
- Your grade will be determined from the weighted-average of your group and not from your individual performance. The highest grade will be weighted the most, and the lowest the least. Low grades will drag the average down, so it is in your best interest to collaborate during the discussion part of this quiz. All members of your team get the same grade, determined from that weighted average.

A Magnetic Resonance Imaging MRI) solenoid consists of 6400.0 turns of superconducting wire and has a radius of $R = 0.50\text{m}$. It generates a magnetic field whose strength is 1.5T and the wire carries a current of 300.0A.

1. What is the strength of the magnetic dipole moment of the coil?

2. The Earth's magnetic field has a strength of $B = (4.0 \times 10^{-5})\text{T}$ and is perpendicular to the magnetic moment of the coil. What is the magnitude of the torque exerted by the Earth's magnetic field on the MRI coil?