Group MND / WS 2021

Test 1 - Electromagnetism (7P)

The following tasks consider a coreless coil with $N = 100$ turns, the radius $r = 0.02\text{m}$ (or $r = 2 * 10^{-2}\text{m}$) and the length $l = 0.18\text{m}$.

Calculate the Inductivity of the coil. (3P)

$$A = 2 * pi * r^2 = 2.513 * 10^{-3}\text{m}^2 \tag{1}$$

$$L = N^2 * mu_0 * A/l = 1.755 * 10^{-3}\text{H} \tag{2}$$

Calculate the magnetic resistance R_m of the coil. (4P)

$$R_m = l/(mu_0 * A) = 5.699 * 10^6\Omega \tag{3}$$