Group MND / WS 2021

# Test 1 - Electromagnetism (7P)

The following tasks consider a coreless coil with $N = 110$ turns, the radius $r = 0.02\text{m}$ (or $r = 2 * 10^{-2}\text{m}$ and the length $l = 0.13\text{m}$.

## Calculate the Inductivity of the coil. (3P)

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

$$L = N^2 * mu_0 * A/l = 2.94 * 10^{-3}\text{H} \tag{2}$$

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

$$R_m = l/(mu_0 * A) = 4.116 * 10^6\Omega \tag{3}$$