Solutions | Quiz 1 | Continuous Assessment | BET – G1 – Teams 6 & 7 | 04 Dec 2021

Topic – Introduction to Magnetism

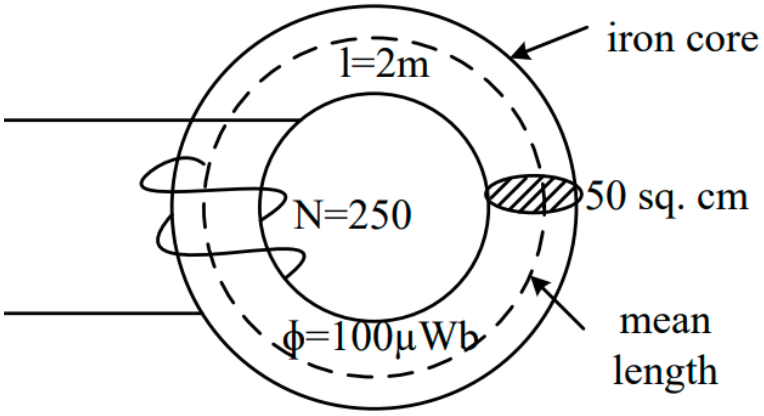
1. **It is required to produce a flux of 15 mWb across a 2 mm long air gap. The effective area of cross-section is 200 cm2. The mmf needed under above condition will be:**

$$S_g = \frac{l_g}{A_g\,\mu_0\,\mu_{rg}} = \frac{(2\times10^{-3})}{200\times10^{-4}\times4\pi\times10^{-7}\times1} = 79577.47155\ AT/Wb$$

$$\emptyset = \frac{mmf}{Reluctance} \quad or \quad mmf = \emptyset \times S_g = 15\times10^{-3}\times79577.47155 = \mathbf{1193.66\ AT}$$

$$\approx \mathbf{1194\ A\text{-}T}$$

2. **For the given circuit. The relative permeability of the core is 100. The current flowing through the coil is:**



) Magnetic field strength, $H = \frac{mmf}{l} = \frac{NI}{l}$

$$I = \frac{Hl}{N}$$

$$H = \frac{B}{\mu} = \frac{\phi}{A\mu} = \frac{100*10^{-6}}{50*10^{-4}*4\pi*10^{-5}} = 159.15\,A/m$$

$$\boxed{I} = \frac{Hl}{N} = \frac{159.15*2}{250} = \boxed{1.27A}$$