Answer on Question #39384, Physics – Electromagnetism

Question:

Consider a toroid of diameter of 40 cm and 800 turns if current of 0.5 a is flowing through wire then flux density at a point on the mean circumference of the toroid is?

Answer:

$d = 40\ cm$

$N = 800$

$I = 0.5\ A$

A long toroid creates a uniform magnetic field of induction

$$B = \mu_0 NI = 4\pi \cdot 10^{-7} \cdot 800 \cdot 0.5 = 5 \cdot 10^{-4}\ T,$$

inside it, where $\mu_0 = 4\pi \cdot 10^{-7}\ \frac{N}{A^2}$ is the vacuum permeability It is directed along the toroid axis.