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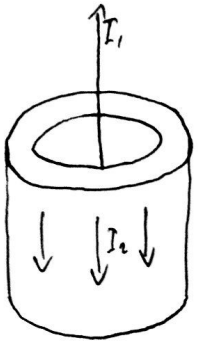
2.) Dik : $I_1 = 4\ A$

$I_2 = 1\ A$

$R_1 = 6\ cm$

$R_2 = 11\ cm$



Dit : a. B, r = 2 cm

b. B, r = 7 cm

c. B, r = 12 cm

Jawab :

a. $B = \frac{\mu_0 I_{in}}{2\pi r}$

$r = 2\ cm = 2 \times 10^{-2}\ m$

$r \leq R_1$

$I_{in} = I_1 = 4\ A$

$B = \frac{4\pi \times 10^{-7} \cdot 4}{2\pi \cdot 2 \times 10^{-2}}$

$B = 4 \times 10^{-5}\ T$

b. $r = 7\ cm = 7 \times 10^{-2}\ m$

$R_1 \leq r \leq R_2$

$I_{in} = I_1 - I_{2r}$

$= 4 - \frac{\pi r^2 - \pi R_1^2}{\pi R_2^2 - \pi R_1^2} I_2$

$= 4 - \frac{7^2 - 6^2}{11^2 - 6^2} \cdot 1$

$= 4 - \frac{13}{\sqrt{85}}$

$= \frac{327}{\sqrt{85}}\ A$

$B = \frac{\mu_0 I_{in}}{2\pi r}$

$B = \frac{4\pi \times 10^{-7}}{2\pi \cdot 7 \times 10^{-2}} \cdot \frac{327}{\sqrt{85}}$

$B = 1{,}1 \times 10^{-5}\ T$

c. $r = 12\ cm = 12 \times 10^{-2}\ m$

$r \geq R_2$

$I_{in} = I_1 - I_2 = 4 - 1 = 3\ A$

$B = \frac{\mu_0 I_{in}}{2\pi r}$

$B = \frac{4\pi \times 10^{-7} \cdot 3}{2\pi \cdot 12 \times 10^{-2}}$

$B = 0{,}5 \times 10^{-5}\ T$

$B = 5 \times 10^{-6}\ T$