



ИСПИТ ИЗ ОСНОВА ЕЛЕКТРОТЕХНИКЕ 2

21. 06. 2019. - Рјешења

1.

- a) $B = 3,72 \mu\text{T}$,
б) $\Delta B \approx 1,42 \mu\text{T}$.

2.

$$H_1 = \frac{I}{2\pi a^2} r, \quad (r < a),$$

$$H_i = \frac{I}{2\pi r}, \quad (r > a), \quad (i = 2, 3, 4),$$

$$B_1 = \mu_0 H_1 = \frac{\mu_0 I}{2\pi a^2} r, \quad (r < a),$$

$$B_i = \mu_0 H_i = \frac{\mu_0 I}{2\pi r}, \quad (a < r < b), \quad (i = 2, 3, 4),$$

$$B_3 = \frac{k_1 H_3}{k_2 + H_3} = \frac{k_1 \frac{I}{2\pi r}}{k_2 + \frac{I}{2\pi r}} = \frac{k_1 I}{2\pi r k_2 + I}, \quad (b < r < c), \quad \left(H_3 = H_i|_{i=3} = \frac{I}{2\pi r}, \quad r > a \right),$$

$$B_4 = \mu_0 H_4 = \frac{\mu_0 I}{2\pi r}, \quad (r > c), \quad \left(H_4 = H_i|_{i=4} = \frac{I}{2\pi r}, \quad r > a \right),$$

$$M = \begin{cases} 0, & r < b, \\ \frac{k_1 I}{\mu_0 (2\pi r k_2 + I)} - \frac{I}{2\pi r}, & (b < r < c), \\ 0, & r > c. \end{cases}$$

3.

$$k = 1, L_{\text{max}} = 2L.$$

4.

- a) $\underline{I}_1 = j11 \text{ A}, \quad \underline{I}_2 = 11e^{-j\frac{2\pi}{3}} \text{ A}, \quad \underline{I}_3 = 11e^{-j\frac{\pi}{3}} \text{ A},$
б) $R' = 5,77 \Omega.$