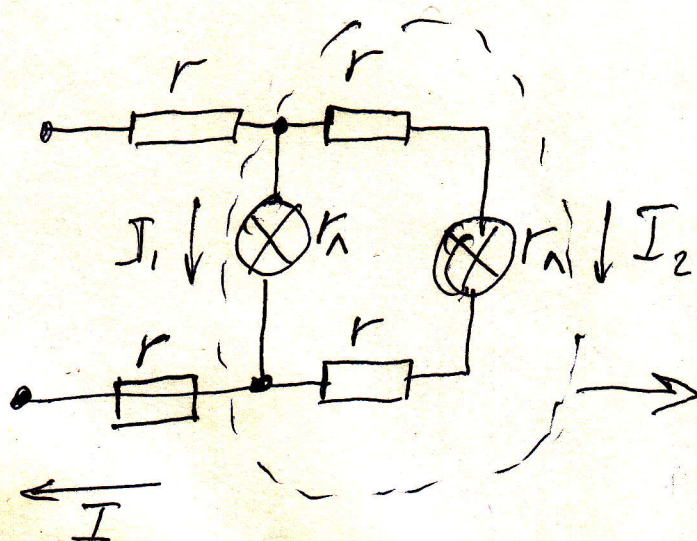




$$r = 1,5$$

$$r_l = 37$$

$$R = \frac{(r + r_l + r) \cdot r_l}{(r + r_l + r) + r_l} \approx 19,22$$

$$R_{\text{общ}} = R + 2r = 22,22$$

$$I = \frac{U}{R_{\text{общ}}} = \frac{12}{22,22} \approx 0,54$$

$$\begin{cases} \frac{r + r_l + r}{r_l} = \frac{I_1}{I_2} \\ I_1 + I_2 = I \end{cases} \Rightarrow I_1 = \frac{I}{1 + \frac{r_l}{r + r_l + r}} \approx 0,28$$

$$I_2 = \frac{I}{\frac{r + r_l + r}{r_l} + 1} \approx 0,26$$

$$Q = I^2 R t$$

$$\text{Лампа 1: } Q = 0,28^2 \cdot 37 \cdot 20 \approx 58,02$$

$$\text{Лампа 2: } Q = 0,26^2 \cdot 37 \cdot 20 = 50,02$$