

ΕΝΔΕΙΚΤΙΚΕΣ ΑΠΑΝΤΗΣΕΙΣ

Θέμα 4^ο

4.1

$$T = \kappa * \Phi * I_T$$

$$T' = \kappa * \Phi * I_T'$$

$$\frac{T}{T'} = \frac{\kappa * \Phi * I_T}{\kappa * \Phi * I_T'} \Rightarrow \frac{T}{T'} = \frac{I_T}{I_T'} \Rightarrow \frac{T}{\frac{T}{2}} = \frac{I_T}{I_T'} \Rightarrow 2 = \frac{I_T}{I_T'} \Rightarrow 2 = \frac{40}{I_T'} \Rightarrow I_T' = \frac{40}{2} = 20A$$

$$U = E_a + I_T \cdot R_T \Rightarrow E_a = U - I_T \cdot R_T \Rightarrow E_a = 220 - 40 * 0,5 = 200 - 20 = 200V$$

$$U = E_a' + I_T' \cdot R_T \Rightarrow E_a' = U - I_T' \cdot R_T \Rightarrow E_a' = 220 - 20 * 0,5 = 220 - 10 = 210V$$

$$\frac{|E_a - E_a'|}{E_a} * 100 = \frac{|200 - 210|}{200} * 100 = \frac{10}{200} * 100 = 5\%$$

4.2

$$E_a = \kappa * \Phi * n$$

$$E_a' = \kappa * \Phi * n'$$

$$\frac{E_a}{E_a'} = \frac{\kappa * \Phi * n}{\kappa * \Phi * n'} \Rightarrow \frac{E_a}{E_a'} = \frac{n}{n'} \Rightarrow \frac{200}{210} = \frac{1000}{n'} \Rightarrow 200 * n' = 1000 * 210 \Rightarrow n' = \frac{1000 * 210}{200} = 1050rpm$$

$$\frac{|n - n'|}{n} * 100 = \frac{|1000 - 1050|}{1000} * 100 = \frac{50}{1000} * 100 = 5\%$$