

Problema 1

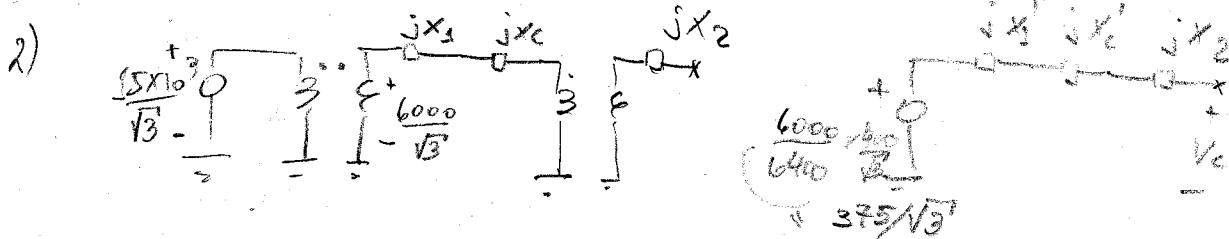
Electrotecnica

31/02/2020

$$1) I_{N1} = \frac{300 \times 10^3}{\sqrt{3} \times 6000} = 28,9 \text{ A}$$

$$I_{N2} = \frac{315 \times 10^3}{\sqrt{3} \times 6400} = 28,5 \text{ A} \Rightarrow 400 \text{ I}_{N2} = 456 \text{ A}$$

\Rightarrow Limita T_2 .

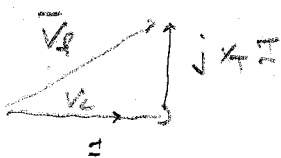


$$X_1 = 0,04 \times \frac{6000^2}{300 \times 10^3} = 48 \Omega \Rightarrow X_1' = 48 \times \left(\frac{6400}{6000}\right)^2 = 90,9 \Omega$$

$$X_c = 0,5 \times 0,03 = 0,015 \Omega \Rightarrow X_c' = 60 \times 10^{-6} \Omega$$

$$X_2 = 0,05 \times \frac{6400^2}{315 \times 10^3} = 0,025 \Omega$$

3)



$$\bar{V}_p = jX_+ \bar{I} + \bar{V}_c$$

$$V_c = \sqrt{V_p^2 - (X_+ I)^2} = \underline{\underline{215,9 \text{ V}}}$$

$$X_+ = X_1' + X_c' + X_2 = 0,049 \Omega$$

$$|V| = \frac{375}{\sqrt{3}} = 216,8 \text{ V}$$

$$I = 456 \text{ A} \quad X_+ I = 20,1 \text{ V}$$

4)

$$P_{15} = 300 \text{ kW} \quad Q_{15} = 0$$

$$P_{28,5} = 3 \times 215,9 \times 456 = 295,3 \text{ kW}$$

$$\Rightarrow P_{\text{red}} \approx -5 \text{ kW}$$

$$Q_{\text{red}} = X_+ I^2 = \underline{\underline{9150 \text{ kVAR}}}$$