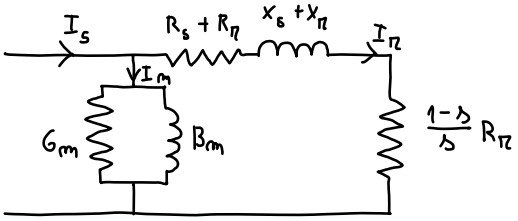
a)



$R_s = 0{,}5\,\Omega$

$R_\pi = 0{,}4\,\Omega$

$X_s = 2{,}2\,\Omega$

$X_\pi = 2{,}0\,\Omega$

1. $I_\pi = 527\ A$

$P_c = 3 \cdot I_\pi^2 \cdot (R_\pi + R_s) \approx 750\,kW$ **A**

2. $s = 0{,}04$

$s = \frac{\omega_s - \omega_\pi \cdot PP}{\omega_s} \iff \frac{\omega_s - s\omega_s}{PP} = \omega_\pi \iff \omega_\pi = 48\pi \Rightarrow$ $f_\pi = 24\,Hz$, $N_\pi = 1440\,rpm$

$V_m = 10\,kV \rightarrow V_s = \frac{V_m}{\sqrt{3}}$ (Está em estrela)

$|I_s| = \left| \frac{V_s}{R_s + \frac{R_\pi}{s} + j(X_s + X_R)} \right| = 510\,A$

$P_M = 3 \cdot \frac{1-s}{s} \cdot R_\pi \cdot I_\pi^2 \approx 8\,MW$ **C**

b) $P_m = 8\,MW$

$s = 0{,}04$

$P_m = 3 \cdot I_\pi^2 \cdot \frac{1-s}{s} R_\pi \iff \sqrt{\frac{P_m}{3R_\pi} \cdot \frac{s}{1-s}} = I_\pi \iff I_\pi = 527\,A$

$V_s = \sqrt{3} \cdot I_\pi \cdot \left(\frac{R_\pi}{s} + R_s + j(X_s + X_\pi) \right) = 10.3\, e^{21.8^\circ}\ kV$

$T_m = \frac{P_m}{\omega_\pi} = 53\,k\,N_m$

$T = 53\,k\,N_m$ $V_s = 10.3\,kV$