#3

$S_n = 100\ KVA$

$a = \frac{8000}{277}$

$R_{1(HV)} = 5\ \Omega$

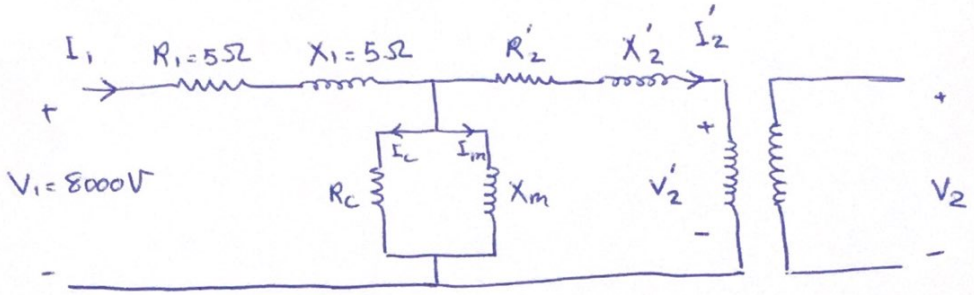
$X_{1(HV)} = 5\ \Omega$

$R_{2(LW)} = 0.005\ \Omega$

$X_{2(LW)} = 0.006\ \Omega$

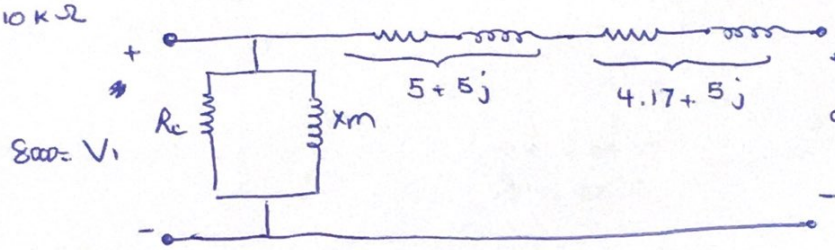
$R_{c(HV)} = 50\ K\Omega$

$X_{m(HV)} = 10\ K\Omega$

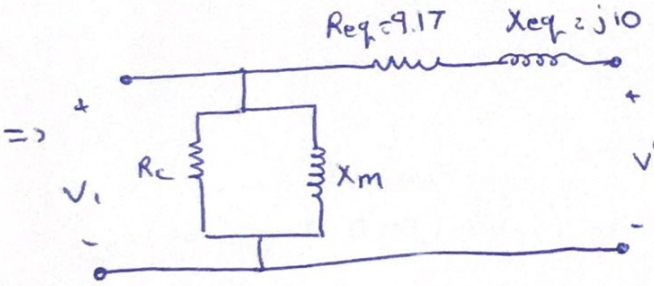


$R'_2 = a^2 R_2 = \left(\frac{8000}{277}\right)^2 \times \frac{5}{1000} \approx 4.17\ \Omega$

$X'_2 = a^2 X_2 = \left(\frac{8000}{277}\right)^2 \times \frac{6}{1000} = 5\ \Omega$



$aV_2 = \frac{8000}{277} \times 277 =$



c)

$\begin{cases} V_{b1} = V_{n1} = 8000\ Pu \\ V_{b2} = V_{n2} = 277\ Pu \end{cases}$ & $S_{b1} = S_{b2} = 100\ KVA$

$\begin{cases} I_{b1} = \frac{S_b}{V_{b1}} = \frac{100 \times 10^3}{8000} = 12.5\ Pu \\ I_{b2} = \frac{S_b}{V_{b2}} = \frac{100 \times 10^3}{277} = 361\ Pu \end{cases}$, $\begin{cases} Z_{b1} = \frac{V_{b1}}{I_{b1}} = \frac{8000}{12.5} = 640 \\ Z_{b2} = \frac{V_{b2}}{I_{b2}} = \frac{277}{361} = 0.76 \end{cases}$

$R_{e1_{pu}} = \frac{R_{e1}}{Z_{b1}} = \frac{9.17}{640} = 0.01$, $X_{e1_{pu}} = \frac{X_{e1}}{Z_{b.}} = \frac{10}{640} = 0.01$