#2 $\begin{cases} S_n = 50\ kVA \\ a = \frac{240}{2400} \\ f = 60\ Hz \end{cases}$

OCT: $V_{oc} = 48\ V$, $I_{oc} = 20\ A$, $P_{oc} = 620\ W$

CST: $V_{sc} = 240\ V$, $I_{sc} = 5.5\ A$, $P_{sc} = 186$

$R_c = \frac{V_{oc}}{P_{oc}} = \frac{48}{620} = 0.07\ \Omega$

$I_c = \frac{V_{oc}}{R_c} = \frac{48}{0.07} = 685\ A$

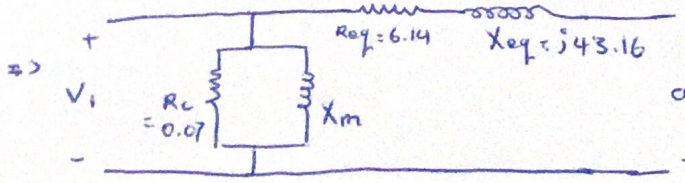
$X_m = \frac{V_{oc}}{I_m} = \frac{48}{\sqrt{400 - 469225}}$

$I_m^2 + I_c^2 = I_{oc}^2 \Rightarrow I_m = \sqrt{I_{oc}^2 - I_c^2} = \sqrt{20^2 - 685^2} = \sqrt{400 - 469225}$

$R_{eq} = \frac{P_{sc}}{|I_{sc}|^2} = \frac{186}{30.25} = 6.14$, $|Z_{eq}| = \frac{V_{sc}}{I_{sc}} = \frac{240}{5.5} = 43.6$

$\cos\varphi = 0.8 \Rightarrow \varphi = 36^\circ$

$|X_{eq}| = \sqrt{|Z_{eq}|^2 - R_{eq}^2} = \sqrt{1900.96 - 37.6} = 43.16$



$\%\ VR = \frac{(R_{eq}\cos\varphi \pm X_{eq}\sin\varphi)\, I_2}{|V_{FL}|} \times 100$

$= \frac{(6.14 \times 0.8 + 43.16 \times 0.5) \times}{}$