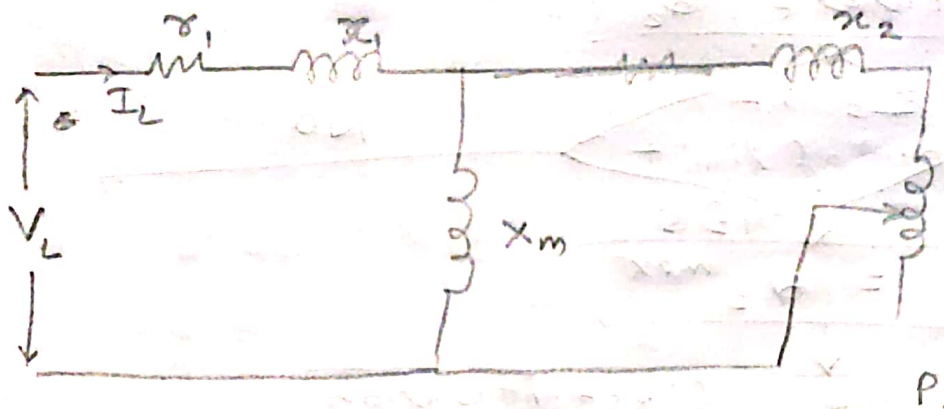

$P_{rated} = 1\,kW = 4000\,W$

Given :- $r_1 = 1.405\,\Omega$, $r_2 = 1.395\,\Omega$, $V_L = V_{rated} = 400\,V$

$x_1 = 1.834\,\Omega$ $(0.005839\,H)$ $x_2 = 1.834\,\Omega$ $(0.005839\,H)$ $X_m = 54.098\,\Omega$ (0.17224)

$N_s = \frac{120f}{P} = 1500\,rpm$ $N_{rated} = 1430\,rpm$, $f = 50\,Hz$, $P = 4$

$$S_{rated} = \frac{N_s - N_r}{N_s} = \frac{1500 - 1430}{1500} = 4.667\,\% = 0.04667$$

$$I_L\,(rated) = \frac{V_L \angle 0}{(r_1 + jx_1) + \left(\frac{jx_2 r_2/s \cdot X_m}{X_m + j\, r_2 x_2/s}\right)}$$

$\Rightarrow I_L = 9.804 \angle -0.786\,(rad)$

$\Rightarrow$ $I_{L_{rated}} = 9.804\,A$ & $pf = 0.7067\ lag$

$$E_{rated} = 4.44 f_{rated} \vec{\phi}_{m\,rated} \quad \text{over all turns}$$

$$\Rightarrow 400 = 4.44 \times 50 \times \phi_{m\,rated}$$

$$\boxed{\phi_{m\,rated} = 1.8}$$