Quiz #1 : Angie Marchena Mondell

P1

$B = \frac{\Phi}{A} = \frac{2,5 \times 10^{-4} wh}{1,3 \times 10^{-4} m^2} = 1,88 t$ $\quad H = \frac{B}{4} = \frac{1,88 t}{2,51 \times 10^{-3} m} = 750,84 AT/m$

Ley Circuito Ampere

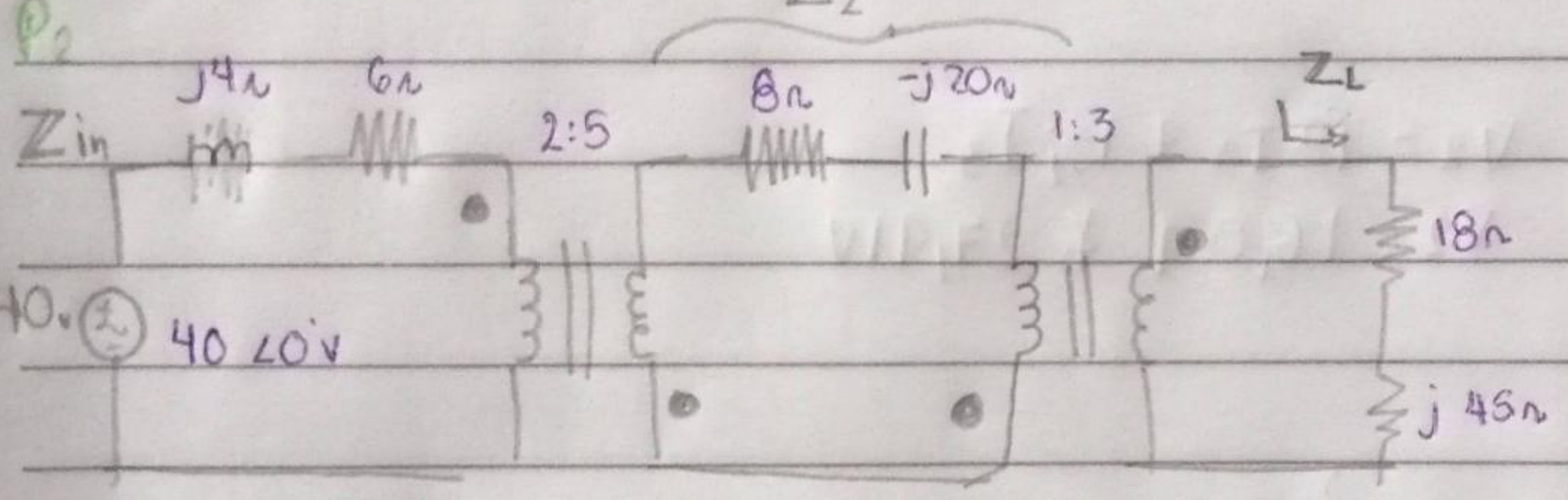
$N_1 I_1 - N_2 I_2 = H_{nucleo} \cdot l_{nucleo} + H_{brecha} + l_{brecha}$

$200 I_1 - I_2 = H (N_{ucleo} + l_{brecha})$

$200 I_1 I_1 = 750,84 (0,002 + 2H \cdot 0,3)$

$I_1 = 1416,8 / 200 = 7,08 A$

P2



Z_2

$Z_L = 8 - j20 + (18 + j45) / 3^2 = 10 - j15$

$Z_{in} = 6 + j4 + Z_L / n^2$

- $Z_{in} = \frac{6 + j4 + (10 - j15)}{(5/2)^2} = 7,768 \Omega \angle 11,89°$

- $I_1 = \frac{40}{Z_{in}} = \frac{40}{7,768 \angle 11,89} \Rightarrow 5,15 \angle -11,89 A$

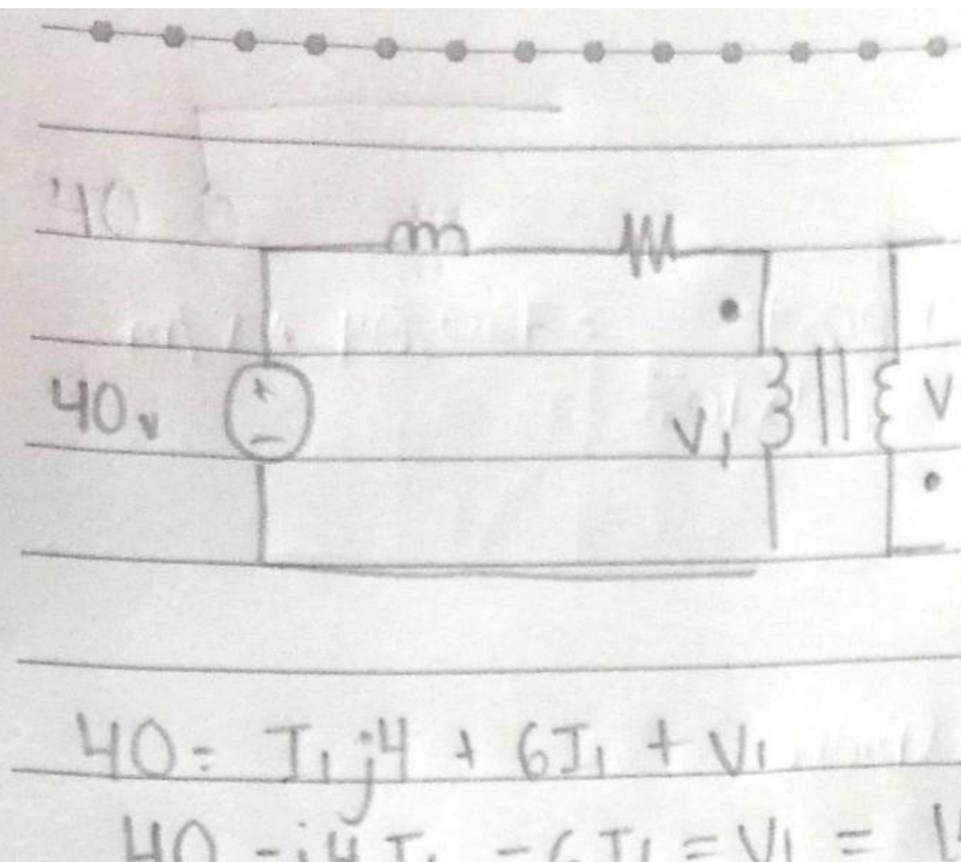
- $I_2 = \frac{-I_1}{n} = \frac{-(5,15 \angle -11,89)}{(2,5)} \Rightarrow 2,06 \angle 168,11 A$

- $I_3 = \frac{-I_2}{n'} = \frac{-(0,824 \angle 168,11)}{3'} \Rightarrow 0,6867 \angle -11,89 A$

A) $I_1 = 5,154 \angle -11,89° A$

$I_2 = 2,06 \angle 168,11° A$

$I_3 = 0,68 \angle -11,89 A$



$40 = I_1 j4 + 6I_1 + V_1$

$40 - j4I_1 - 6I_1 = V_1 = 14,85\angle -68,19V$

$\frac{V_2}{V_1} = \frac{N_2}{N_1} \Rightarrow V_2 = \frac{-5}{2} \cdot V_1 = 37,13\angle 111,81V$

$V_2 = 18I_3 + 15jI_3$

$V_2 = 16,089\angle 27,91V$

$\frac{V_2}{V_1} = -\frac{N_2}{N_1} = V_A = \frac{N_1}{N_2} \cdot V_B \Rightarrow V_A = \frac{-1}{3} V_B = 5,363\angle -152,08V$

- b) Primario

$V_1 = 14,85\angle -68,19V$

$V_A = 5,363\angle -152,08$

- c) Vsec

$V_2 = 37,13\angle 111,81V$

$V_b = 16,089\angle 27,91V$