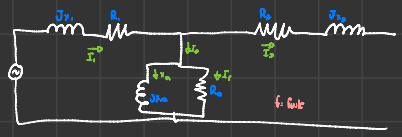
Question 1 :

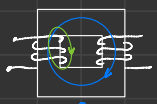
$$\frac{N_1}{N_2} = \frac{V_1}{V_2}$$

$H(\cdot NI \rightarrow \cdot I \cdot f(N))$

$\left.\begin{array}{l} C \cdot N \frac{d\varphi}{dt} \\ \varphi \cdot B \cdot A \end{array}\right\} C \cdot f(B)$

Question 2 :





Φ_m (magnétique) - X_m → Principe doubleur

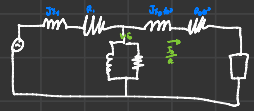
flux de fuite $C X_f$

a) à vide

$P_{fer} = \frac{E_p^2}{R_m}$

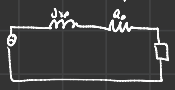
$Q_m = \frac{E_p^2}{X_m}$

b)



Comme $I_m \ll I_1$

$X_m, R_m \gg X_1, X_{2\sigma}, R_1, R_2$



$X_p = X_1 + a^2 X_{2\sigma}$

$R_p = R_1 + a^2 R_2$

Ess. :

$\Rightarrow R_1, R_2$ Xif. $X_{2\sigma}$

Question 3 :

voir P.460 - P.461

Calculer les pertes :

$$Z_{tot} = \frac{V_p}{I} \quad (1)$$

$$Z_{tot} = R_{tot} + jX_{tot}$$

$$(R_p + R_{ch}) + j(X_p + X_{ch})$$

$$F.P. = \frac{R_{ch}}{\sqrt{R_{ch}^2 + X_{ch}^2}} = 0,9 \quad (2)$$

(2) $R_{ch} = X_{ch} \cdot \frac{0,9}{\sqrt{1^2 - 0,9^2}}$

$R_{ch} = 2,06 \cdot X_{ch}$

$Z_{tot} = (R_p + 2,06 X_{ch}) + j(X_p + X_{ch})$

↳ On cherche X_{ch}

↳ équation deuxième ordre

$$X = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Calcul de perte

$P_{cu} = R \cdot I^2$

$P_{fe} = \frac{V^2}{R_m}$

Pour en chaleur

$\Delta P = P_{cu} + P_{fer}$

Energie :

$E = P \cdot T$ [s]

$= \frac{\Delta P}{\text{Pertes [W]}}$

→ [Kwh]

1J = 1ws

Q1

$$\frac{N_1}{V_1} = \frac{N_2}{V_2}$$

$$N_1 = \frac{V_1}{V_2} \cdot N_2$$

$$N_1 = \frac{1246}{1.53} \cdot 1 = 81.43$$

$N_1 \approx 80.0$ turns

$$E = N \frac{d\Phi}{dt}$$

$E = 2.44 \sin(2\pi \cdot 60 \cdot t)$

$E = 2.44 \sin(\omega t)$

$$2.44 \sin(\omega t) = N \frac{d\Phi}{dt}$$

$$\int 2.44 \sin(\omega t)\, dt = N\Phi$$

$$-\frac{2.44 \cos(120\pi t)}{120\pi} = N\Phi$$

$$-\frac{2.44 \cos(120\pi t)}{120\pi} = \Phi$$