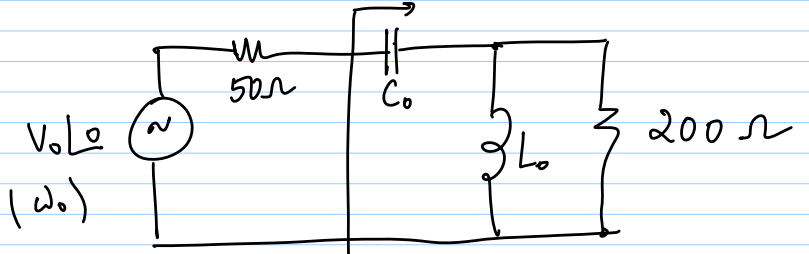
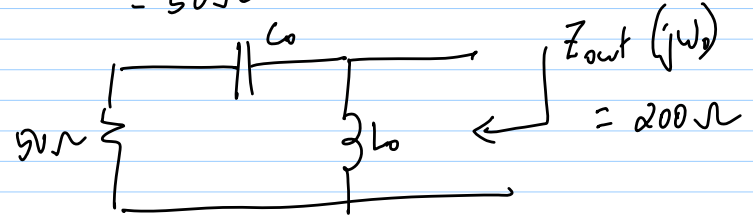


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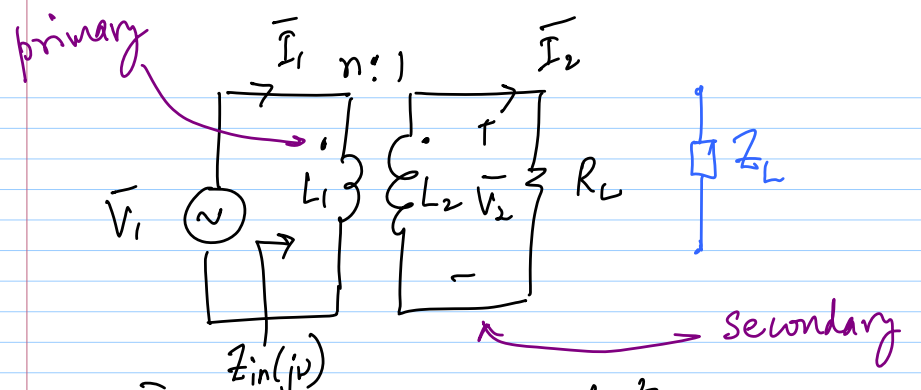
Lec 40



$Z(j\omega) = 50 \Omega$



$Z_{out}(j\omega) = 200 \Omega$



$$Z_{in}(j\omega) = \frac{\bar{V}_1}{\bar{I}_1} = j\omega L_1 + \frac{\omega^2 M^2}{R_L + j\omega L_2}$$

$$= \frac{j\omega L_1 R_L - \omega^2 L_1 L_2 + \omega^2 M^2}{R_L + j\omega L_2}$$

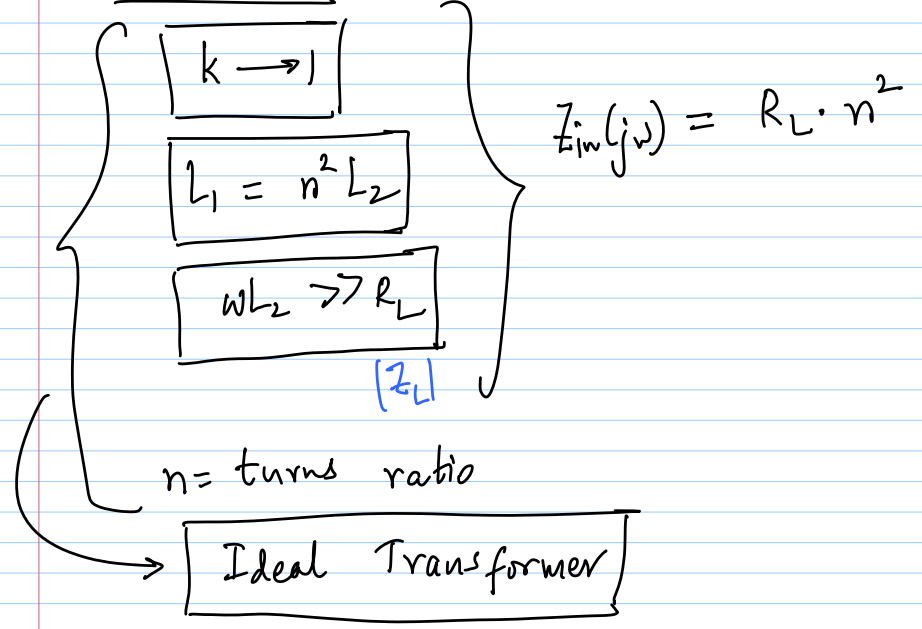
$$Z_{in}(j\omega) = \frac{j\omega L_1 R_L + \omega^2 [M^2 - L_1 L_2]}{R_L + j\omega L_2}$$

$$= \frac{j\omega L_1}{j\omega L_2} \cdot \frac{R_L + \frac{\omega^2 [M^2 - L_1 L_2]}{j\omega L_1}}{1 + \frac{R_L}{j\omega L_2}}$$

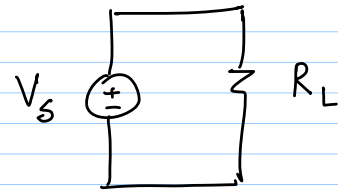
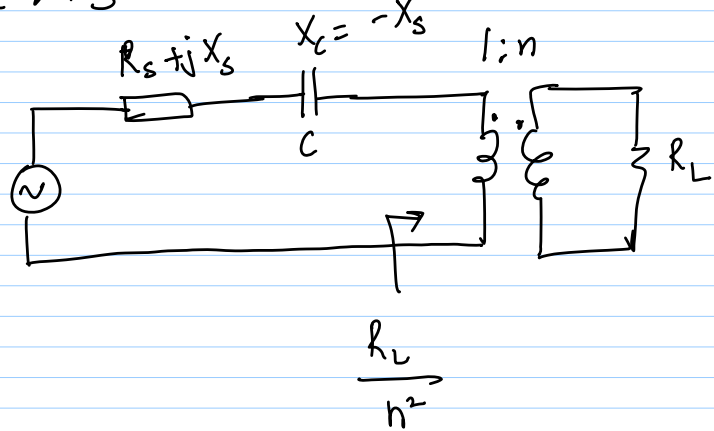
$$= R_L \cdot \frac{L_1}{L_2} \cdot \frac{1 + \frac{\omega^2 [M^2 - L_1 L_2]}{j\omega L_1 R_L}}{1 + \frac{R_L}{j\omega L_2}}$$

$M = k\sqrt{L_1 L_2}$ $[k \rightarrow 1]; L_1 = n^2 L_2;$

conditions

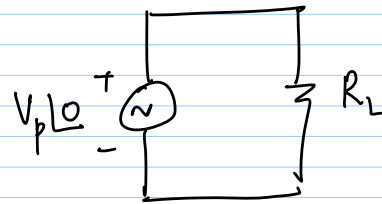


$$R_L \gg R_S$$



$$P_L = \frac{V_s^2}{R_L}$$

$$V_p = \sqrt{2} V_s$$



$$P_L(t) = \frac{V_p^2}{2R_L} [1 + \cos(2\omega t)]$$

