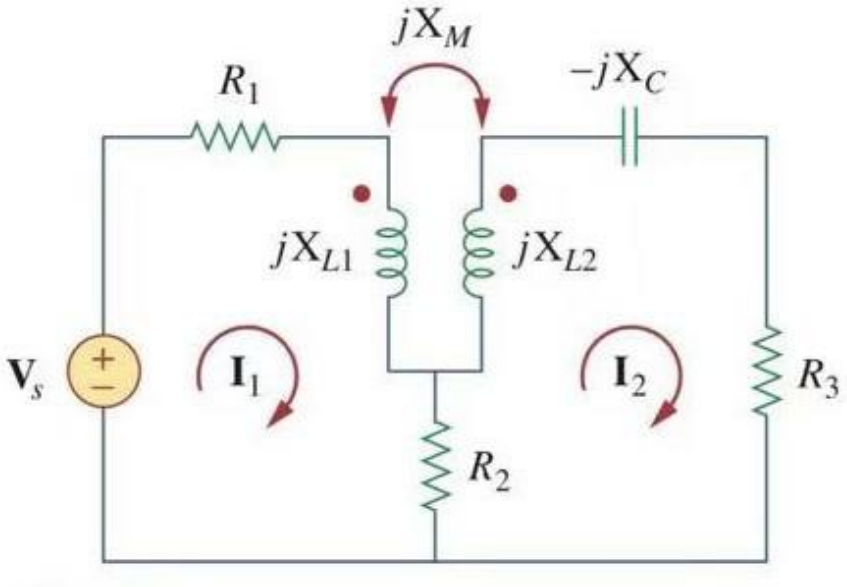
ECE2150J 2024 FA Assignment 6

Due Date: 23:59 December 20th

In order to get full marks, you shall write all the intermediate steps of calculation or proof unless otherwise indicated.

Exercise 6.1 (25%)

$V_S = 10\cos(4t+\pi/4)$, $R_1 = R_2 = 5\Omega, R_3 = 10\Omega, X_{L1} = 15\Omega, X_{L2} = 20\Omega, X_M = 2\Omega, X_C = 0.5\Omega$. Find I_1 and I_2.



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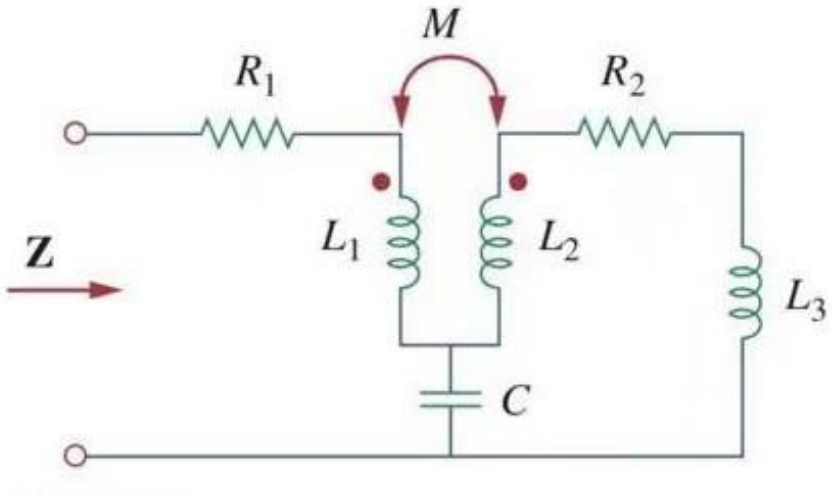
Exercise 6.2 (25%)

$R_1 = R_2 = 5\ k\Omega, M = 20\ H, L_1 = 10\ H, L_2 = 5\ H, L_3 = 10\ H, C = 0.1\ F$. Suppose frequency of source is $\omega = 10\ kHz$. Find the equivalent impedance Z. All currents flow clockwise.



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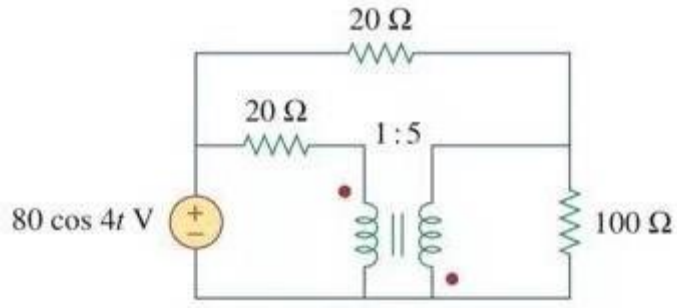
Exercise 6.3 (25%)

Determine the average power absorbed by each resistor in this circuit. All currents flow clockwise.



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Exercise 6.4 (25%)
Determine I_1, I_2, I_3 in this circuit.