

MIDTERM EXAMINATION

Linear Circuits II

Question 1

Voltage and current of an element are $v(t) = 120\sin(314t + 15^\circ)$ V and $i(t) = 5\cos(314t - 45^\circ)$ A respectively.

- Find: V_{rms} , I_{rms} , S , S , P , Q , pf ?
- Find the way to raise pf to 0.95?

Question 2

Write the branch – current equations and the mesh – current equations for the ac circuit of Fig. 1?

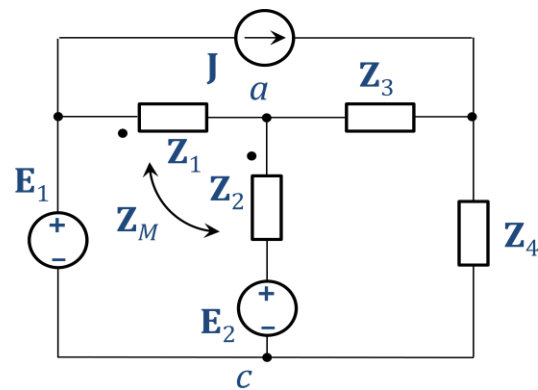


Figure 1

Question 3

For the steady-state circuit in Fig. 2, $e_1 = 100\sin 50t$ V; $j = 2$ A (DC); $e_4 = 50$ V (DC); $M = 0$; $R_1 = 10\Omega$; $R_3 = 30\Omega$; $L_2 = 0.5$ H; $L_5 = 0.8$ H; $C = 200\mu$ F. Find:

- The current of R_3 ?
- The average power of R_3 ?

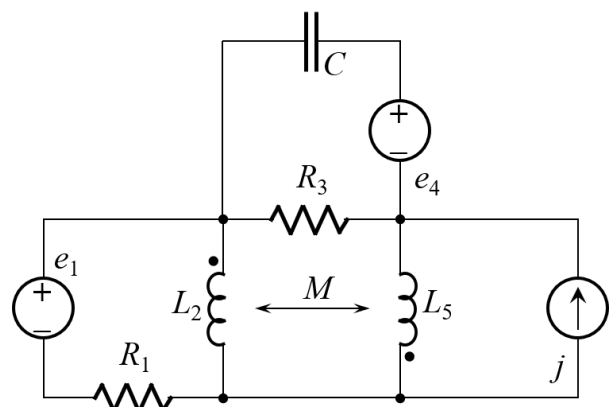


Figure 2