

Circuits and Systems II
Mid term exam Fall 2020 (All questions carry equal marks)

Q1.

Determine the value of V_t and Z_t such that the circuit shown in Figure 1b is the Thevenin equivalent circuit of the circuit shown in Figure 1a.

X_L = Sum of your four digit Reg. No. in Ω .

X_C = Average of your four digits Reg. No. in Ω .

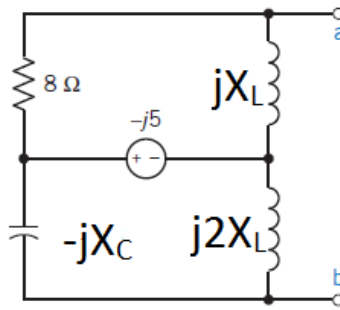


Figure. 1a

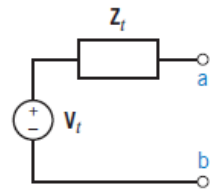


Figure.1b

Q2.

Consider the series RLC circuit of Figure 2 when $R = 10 \Omega$, $L = 1\text{mH}$, $C = (\text{Average of your four digit Reg. No.}) \times 10 \text{ mF}$, and $\omega = 1000 \text{ rad/s}$. Find I and plot the phasor diagram.

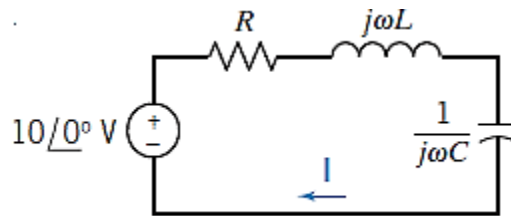


Figure 2

Q3.

Determine the steady-state voltage $V_o(t)$ in the circuit shown in Figure 3 using superposition, when the current source $\omega = (\text{Sum of your four digits Reg. No.}) \times 10 \text{ rad/s}$.

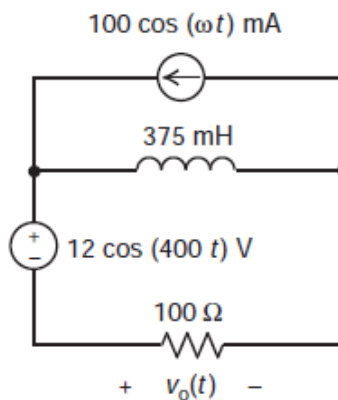


Figure 3

Q4.

For the circuit shown in Figure 4, determine **I** and the complex power **S** delivered by the source when $V = 50\angle 120^\circ$ V rms, $X_C = (\text{Average of your four digit Reg. No.})$

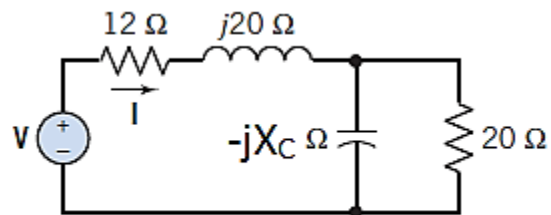


Figure 4

End