

- For the circuit shown in Figure 1, please draw its (a) Thevenin's equivalent circuit (b) Norton's equivalent circuit, with all the parameters determined. [20]
- Please determine the values of I_1 and I_2 in Figure 2. [20]
- The current source $i_s(t)$ in Figure 3 is: $i_s(t) = 2\cos(20t)$ A for $t < 0$ and $i_s(t) = 8\cos(20t)$ for $t \geq 0$. Please determine $i_l(t)$ for all t . [20]
- An inductive motor draws 8kW and 35A from a 380V, 60Hz source. In order to reduce the current to 25A, a capacitor C is connected in parallel with the motor. Please determine two possible capacitance values of the capacitor C. (Note: voltage and current are rms values) [20]
- Draw the asymptotic Bode plot of the gain and phase for the transfer function:

$$H(s) = \frac{20(s+10)}{(s+500)^2} \quad [20]$$

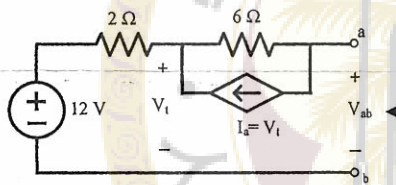


Figure 1

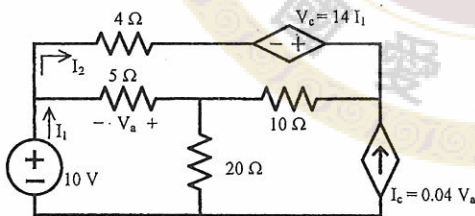


Figure 2

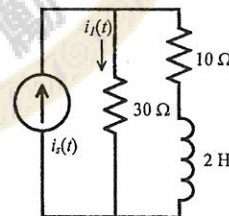


Figure 3

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