



1. In the circuit of Fig. 1, find the values of V_{ab} and V_{cd} . (10%). (10%)
2. In the circuit of Fig. 2, find the value of V_o using the mesh current method. (20%)

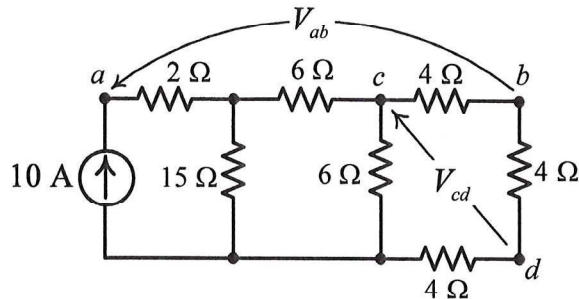


Fig. 1

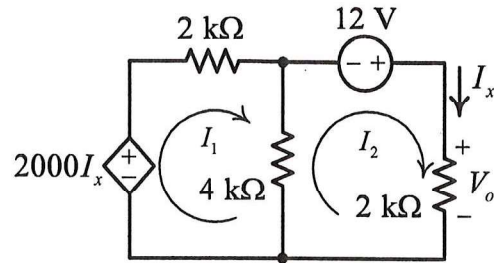


Fig. 2

3. Referring to Fig. 3, the switch closes at $t=0$, and the initial conditions are $i(0)=0$ and $v(0)=0$.
 - (a) Calculate the final conditions $v(\infty)$ and $i(\infty)$. (6%)
 - (b) Find the circuit's natural frequencies s_1 and s_2 . (6%)
 - (c) Calculate the capacitor's voltage $v(t)$ for $t > 0$. (8%)
4. Find the current I in the circuit in Fig. 4. (16%)

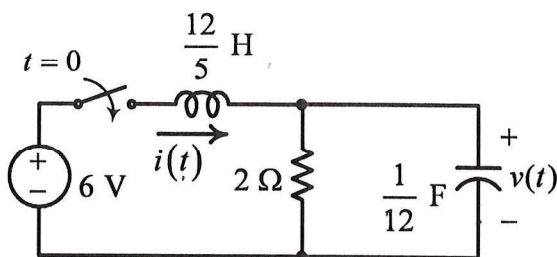


Fig. 3

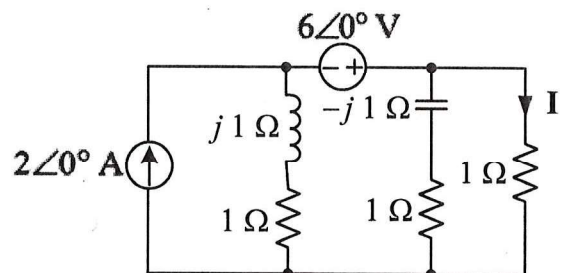


Fig. 4

5. Find the current I_1 and the output voltage V_o in the circuit in Fig. 5. (16%)
6. In the balanced three-phase system shown in Fig. 6, the line voltage is 34.5 kV rms at 60 Hz. Find the values of the capacitors C such that the total load has a power factor of 0.90 lagging. (18%)

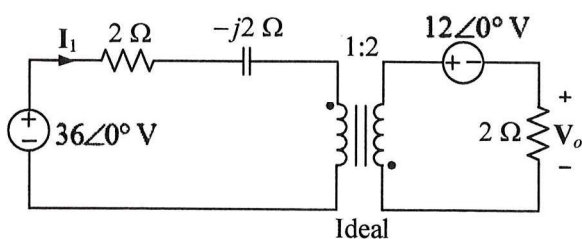


Fig. 5

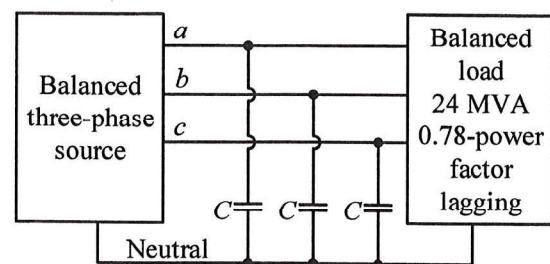


Fig. 6