



1. Find the current  $I_o$  in the circuit in Fig. 1. (20%)

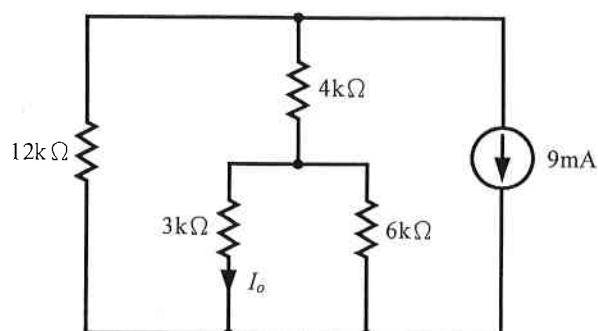


Fig. 1

2. A load operates at 20 kW, 0.8 pf lagging. The load voltage is  $220\angle 0^\circ$  V rms at 60 Hz. The impedance of the line is  $0.09 + j0.3 \Omega$ . Determine the voltage and power factor at the input to the line. (20%)
3. The Y-connected impedances shown in Fig.2 are supplied by a three-phase, three-wire ABC system in which  $V_{BC} = 208\angle 0^\circ$  V. Please calculate the total real power supplied by the source. (20%)

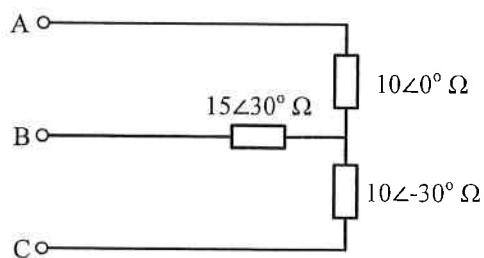


Fig. 2

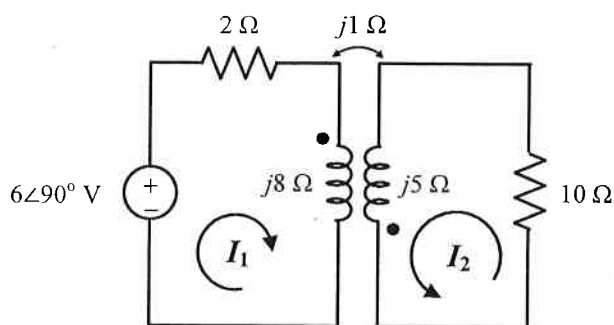


Fig. 3

4. Find the mesh currents  $I_1$  and  $I_2$  in the coupled circuit shown in Fig. 3 using T-equivalent circuit for the linear transformer. (20%)
5. For the circuit shown in Fig. 4, determine the value of  $Z_L$  for maximum average power transfer and the value of the maximum average power delivered to the load. (20%)

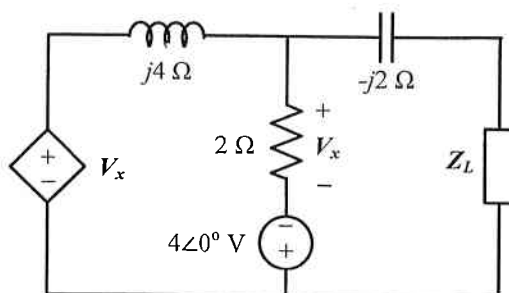


Fig. 4