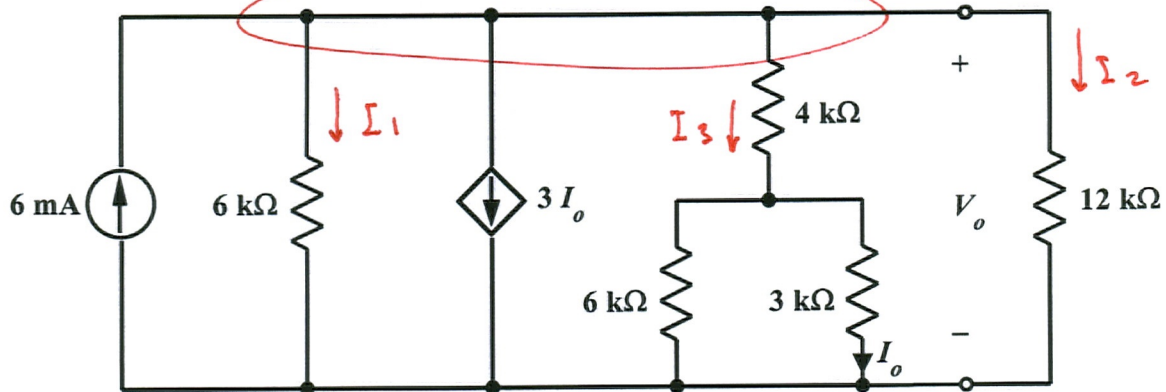


EE/EET 2240  
**Homework Problem #019**

Determine the amount of power absorbed by the 12 kΩ resistor.



$$I_1 = \frac{V_o}{6k\Omega}$$

$$I_o = \frac{2}{3} \frac{V_o}{6k\Omega}$$

$$\Rightarrow 3I_o = \frac{V_o}{3k\Omega}$$

$$I_2 = \frac{V_o}{12k\Omega}$$

$$I_3 = \frac{3}{2} I_o = \frac{V_o}{6k\Omega}$$

$$-6mA + I_1 + 3I_o + I_3 + I_2 = 0 \quad (\text{KCL})$$

$$\text{or } -6mA + \frac{V_o}{6k\Omega} + \frac{V_o}{3k\Omega} + \frac{V_o}{6k\Omega} + \frac{V_o}{12k\Omega} = 0$$

$$\Rightarrow \frac{9V_o}{12k\Omega} = 6mA$$

$$\text{or } V_o = 8V$$

$$P_{12k\Omega} = \frac{V_o^2}{12k\Omega} = \frac{64}{12k} = 5\frac{1}{3} \text{ mW}$$