Question # 1

**a.** Assuming the rate of purchasing one kwH of electricity is **5 Halalas**, **calculate** the expected **monthly electric bill** of a house that contain the following devices.

★ **Five 1.8 kW A/C** units that operate on average for **20 hours per day**

★ **A 2000 W** washing machine that operates for **10 hours per week**

★ **A 1 kW** Ironing machine that operates for **20 hours per week**

★ A lighting load of **4000 W** that operates on average for **20 hours per day**

★ **A 1.5 kW** refrigerator that operates for **24 hours per day**

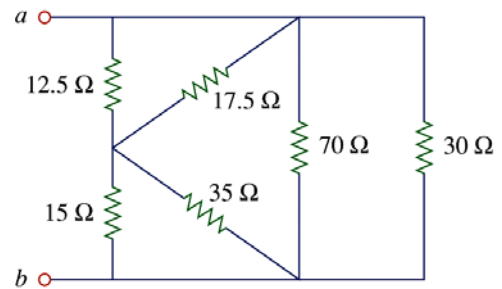★ A total **1000 W** of small devices that operate for **12 hours per day**

b. If your **12 V** car battery needs **100 ms** to start your car and uses **120 J** in this process, **calculate** the used **power** and the **number of electrons** moved in the process.

Question # 2

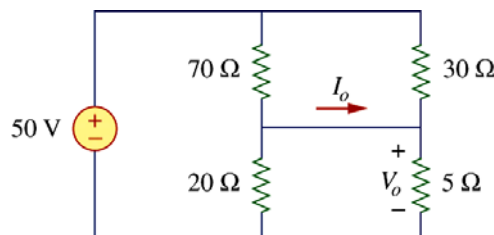**a.** For the circuit shown below, find the **four unknown variables**.
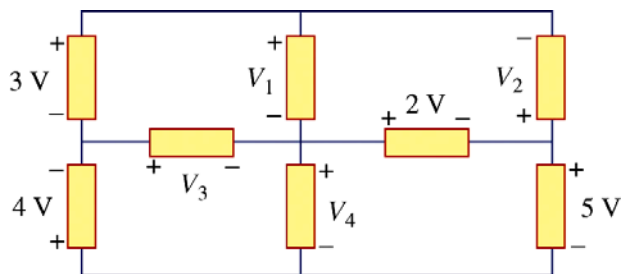
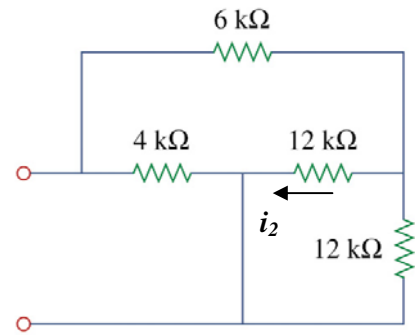**b.** Find the **equivalent resistance** of the following circuit.

Question # 3

Find the **current** I_o and the **voltage** V_o in the following circuit.

Question # 4

If a voltage source $V_s(t) = 25Cos(12t + \frac{\pi}{3})$ is connected to the terminals of the circuit, **find** the following.

6 kΩ

4 kΩ   12 kΩ

i_2

12 kΩ

1. **Frequency** of $V_s(t)$ =	
2. **RMS** value of $V_s(t)$ =	
3. **Instantaneous** value at 5s of $V_s(t)$ =	
4. **Half cycle average** value of $V_s(t)$ =	
5. **Period** of $V_s(t)$ =	
6. **Phase shift** of $V_s(t)$ =	
7. **Frequency** of the current $i_2(t)$ =	
8. **RMS** value of the current $i_2(t)$ =	
9. **Peak to peak** value of the current $i_2(t)$ =	
10. **Draw** the voltage $V_s(t)$ below	

Voltage in Volts

Time in Seconds