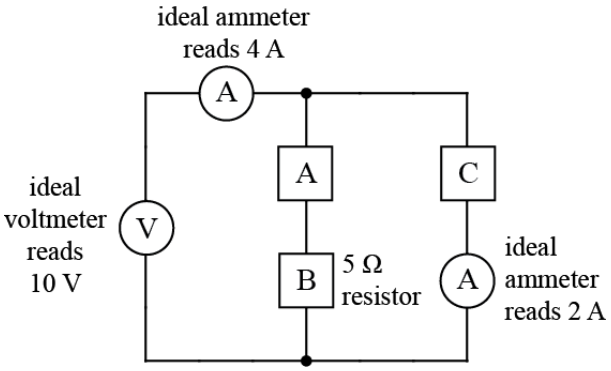
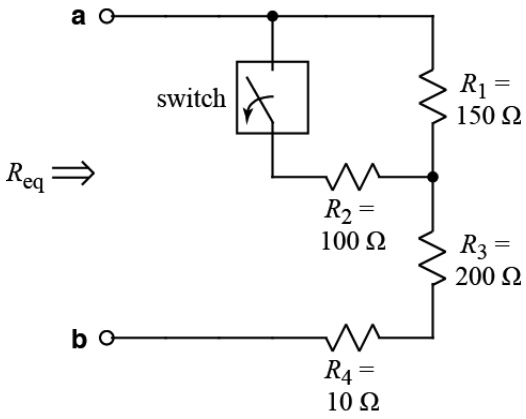
1.



If box A contains a resistor, find the value of that resistor.

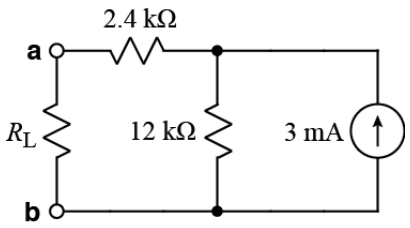
2.



a) Find the equivalent resistance from **a** to **b** with the switch open and then with the switch closed.

b) If a voltage source is connected across **a** and **b** and this causes a voltage drop across R_4 of 2V, what is the voltage drop across R_3?

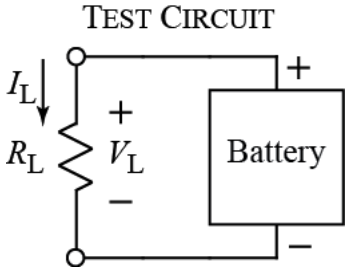
3.



a) Find the Thevenin equivalent of the above circuit (without R_L).

b) Find the power supplied by the current source when R_L is Not connected.

4. a) Given the following data for a battery, find an appropriate model for the battery.

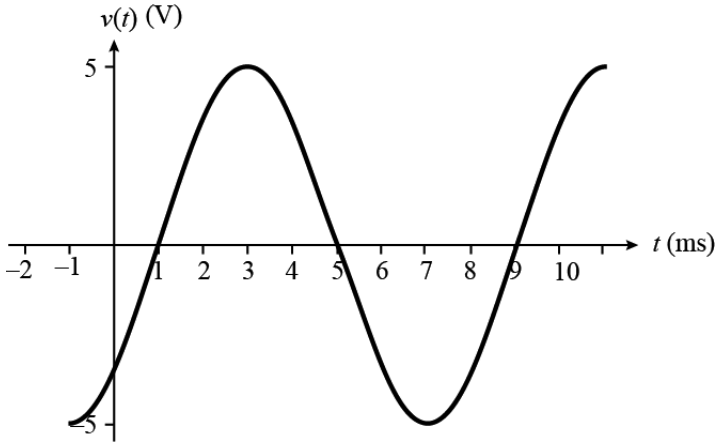


DATA

R_L	V_L	I_L
0.5 Ω	3 V	6 A
2 Ω	4 V	2 A

b) If the battery is placed in a charger that delivers 5V to the battery, how much power must the recharger supply to the battery?

5. a) $v(t) = A\cos(\omega t + \phi)$ is shown below. Find the values of A, ω, ϕ, and period T for $v(t)$.



b) Find the average power for the PWM signal below driving a 10Ω resistor.