
Quiz 12:5D DC Circuits – Electric Power [Q-T]

A battery, which has an EMF of 15.0 Volts and an internal resistance of $r = 5.00 \Omega$, is connected to a load resistance of $R = 25.0 \Omega$. This resistance is in turn embedded in a block of Aluminum that has a mass of 180 grams and a specific heat of $0.90 \text{ J/gm}^\circ\text{C}$.

1. What is the current flowing through the ammeter? [3 pts]
2. What is the reading on the voltmeter connected across the load resistance? [3 pts]
3. How much power is being delivered to the load resistance? [3 pts]
4. How much power is being consumed by the internal resistance of the battery? [3 pts]
5. Suppose that this circuit is operated for a period of 15.0 minutes. How much heat will be delivered to the Aluminum block? [3 pts]

