PQ 13 Electricity

Q

Q1

- The current through a globe connected across the terminals of a 125-V outlet is 0.50 A. At what rate does the bulb convert electric energy to light?

Q2

- A van battery causes a current of 2.0 A through a lamp and produces 12 V across it. What is the power used by the lamp?

Q3

- What is the current through a 75-W globe that is connected to a 125-V outlet?

Q4

- The current through the starter motor of a van is 210 A. If the battery maintains 12 V across the motor, how much electric energy is delivered to the starter in 10.0 s?

Q5

- A torch bulb is rated at 0.90 W. If the light bulb drops 3.0 V, how much current goes through it?

Q6

- An automobile panel lamp with a resistance of 33 ohmn’s is placed across a 12-V battery. What is the current through the circuit?

Q7

- A lamp draws a current of 0.50 A when it is connected to a 120-V source.
- **a.** What is the resistance of the lamp?

- **b.** What is the power consumption of the lamp?

Q8

- A 75-W lamp is connected to 125 V.
- **a.** What is the current through the lamp?

- **b.** What is the resistance of the lamp?

Q9

- A resistor is added to the lamp in the previous problem to reduce the current to half of its original value.
- **a.** What is the potential difference across the lamp?

Q9 continued

- **b.** How much resistance was added to the circuit?

- **c.** How much power is now dissipated in the lamp?

Q10

- A 100W light bulb is 22 percent efficient.
- **a.** How many joules does the light bulb convert into light each minute it is in operation?

- **b.** How many joules of thermal energy does the light bulb produce each minute?