

Tutorial Questions (for ET1005 PEEE I Chapter 3)

1. Calculate the current in each of the following cases:
 - (a) $V = 15\text{ V}$, $R = 10\ \Omega$
 - (b) $V = 50\text{ V}$, $R = 100\ \Omega$
 - (c) $V = 30\text{ V}$, $R = 15\text{ k}\Omega$
2. Calculate the voltage for each value of I and R :
 - (a) $I = 2\text{ A}$, $R = 18\ \Omega$
 - (b) $I = 5\text{ A}$, $R = 56\ \Omega$
 - (c) $I = 250\ \mu\text{A}$, $R = 1.0\text{ k}\Omega$
3. What is the value of the voltage source required to produce the current flow in the circuits of Figure 3-9?

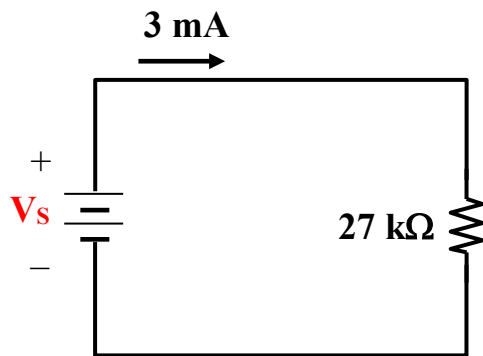


Figure 3-9(a)

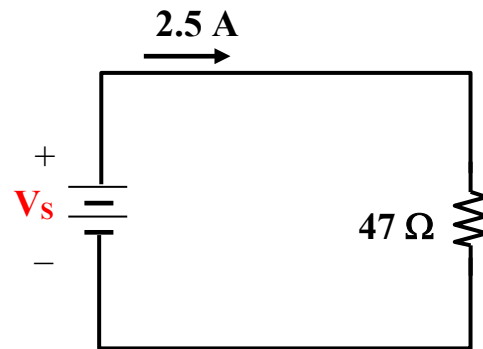


Figure 3-9(b)

4. Determine the resistance for each of the following cases:
 - (a) $V = 10\text{ kV}$, $I = 5\text{ A}$
 - (b) $V = 7\text{ V}$, $I = 2\text{ mA}$
 - (c) $V = 500\text{ V}$, $I = 250\text{ mA}$
5. What is the resistance of the filament of a lamp if it operates with 120 V and 0.8 A of current?

6. Which one of the following three circuits in Figure 3-10 has:
(i) the most current? (ii) the least current?

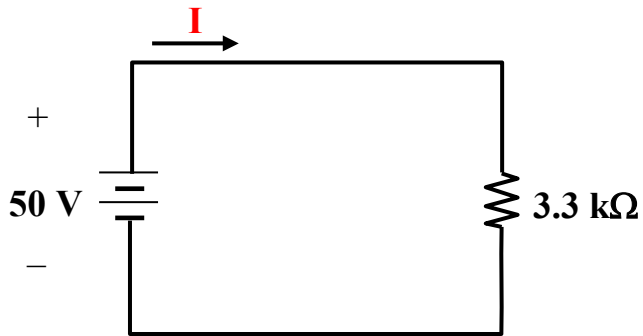


Figure 3-10(a)

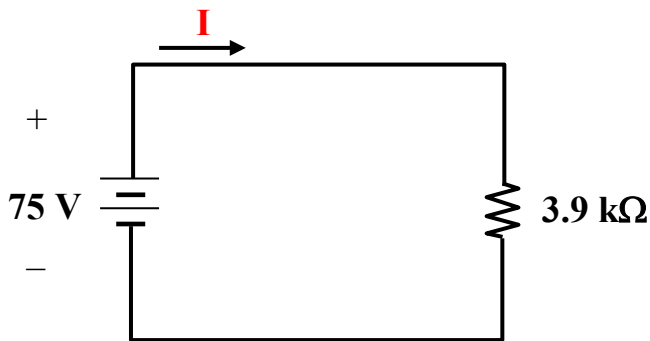


Figure 3-10(b)

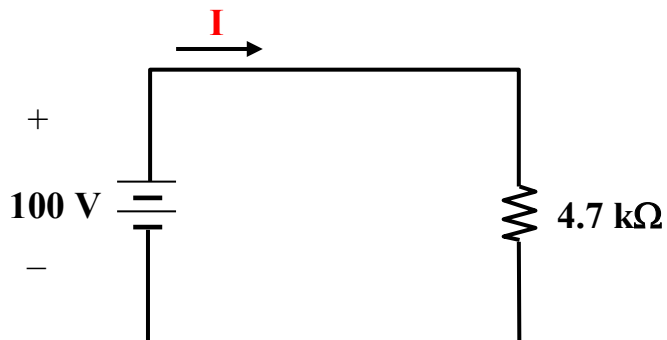


Figure 3-10(c)

7. A circuit consists of a resistor connected across a voltage source. Determine the changes in the current when:
- (a) the voltage is tripled
 - (b) the voltage is reduced by 75%
 - (c) the resistance is doubled
 - (d) the resistance is reduced by 35%
 - (e) the voltage is doubled and the resistance is cut in half
 - (f) the voltage is doubled and the resistance is doubled.

Answers

1. (a) $I = 1.5 \text{ A}$
(b) $I = 0.5 \text{ A}$
(c) $I = 2 \text{ mA}$

2. (a) $V = 36 \text{ V}$
(b) $V = 280 \text{ V}$
(c) $V = 0.25 \text{ V}$

3. (a) $V = 81 \text{ V}$
(b) $V = 117.5 \text{ V}$

4. (a) $R = 2 \text{ k}\Omega$
(b) $R = 3.5 \text{ k}\Omega$
(c) $R = 2 \text{ k}\Omega$

5. $R = 150 \Omega$

6. (a) $I = 15.2 \text{ mA}$
(b) $I = 19.2 \text{ mA}$
(c) $I = 21.3 \text{ mA}$

Figure 3-10(c) has the most current and Figure 3-10(a) has the least current.

7. (a) When voltage triples, current triples.
(b) When voltage is reduced by 75%, current is reduced 75%.
(c) When resistance is doubled, current is halved.
(d) When resistance is reduced 35%, current increases 54%.
(e) When voltage is doubled and resistance is halved, current quadruples.
(f) When voltage and resistance are both doubled, current is unchanged.