

# Electronic Circuits Homework 1

1. Figure 1 show color-coded resistors. Determine the resistance value and the tolerance of each. (2-15)

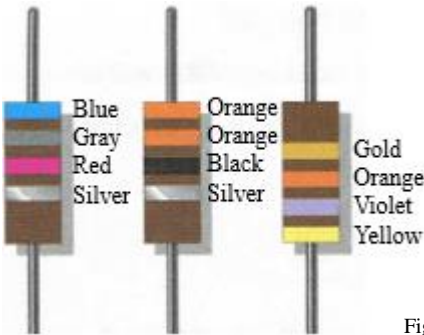


Figure 1

	Digit	Color
Resistance value, first three bands: First band—1st digit Second band—2nd digit *Third band—multiplier (number of zeros following the 2nd digit)	0	Black
	1	Brown
	2	Red
	3	Orange
	4	Yellow
	5	Green
	6	Blue
	7	Violet
	8	Gray
	9	White
Fourth band—tolerance	±5%	Gold
	±10%	Silver

2. In Figure 2 what does each voltmeter indicate when the switch (SW) is in position 1? In position 2? (2-29)

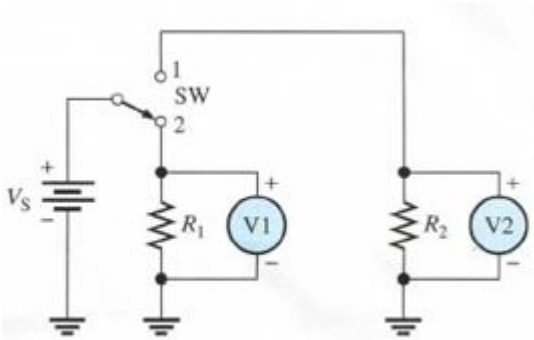


Figure 2

3. There is only one circuit in Figure 3 in which it is possible to have all lamps on at

the same time. Determine which circuit it is. (2-39)

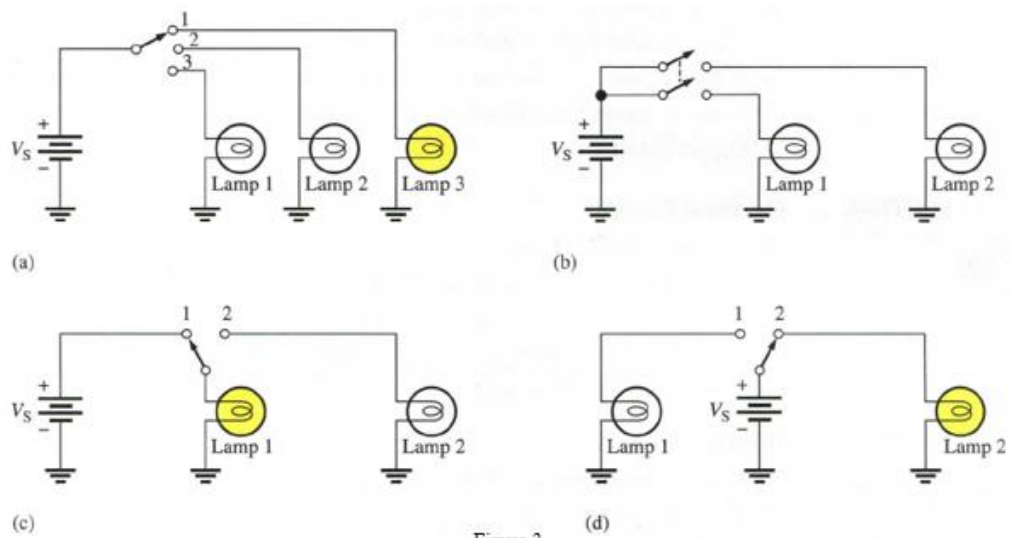


Figure 3

4. A resistor is connected across the terminals of a dc voltage source in each part of Figure 4. Determine the current in each resistor. (3-7)

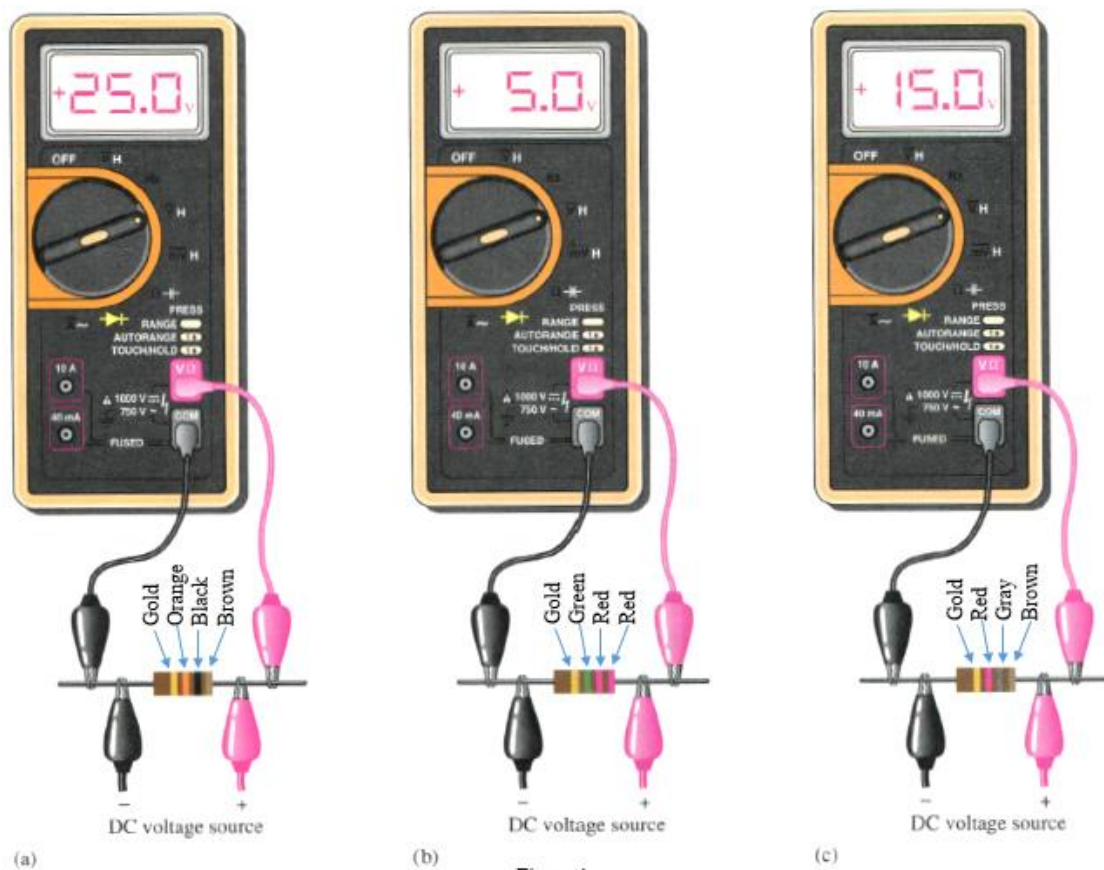


Figure 4

5. Choose the correct value of resistance to get the current values indicated in each circuit of Figure 5. (3-17)

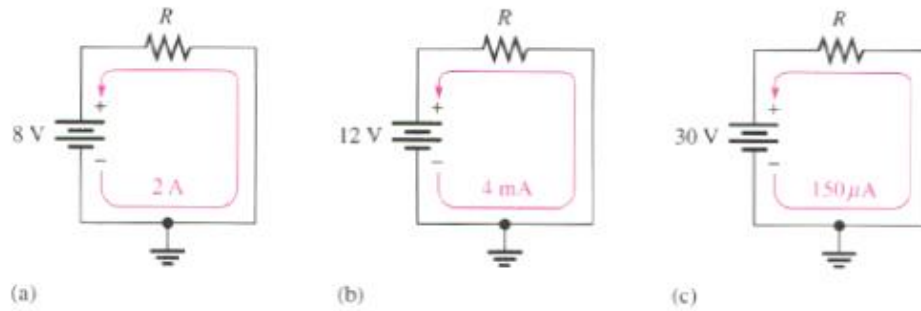


Figure 5

6. Calculate the power dissipated by a  $10\text{ k}\Omega$  resistor carrying  $100\text{ }\mu\text{A}$ . (3-32)
7. If there are  $60\text{ V}$  across a  $620\text{ }\Omega$  resistor, what is the power dissipation? (3-33)
8. Figure 6 is a graph of current versus voltage for three resistance values. Determine  $R_1$ ,  $R_2$ , and  $R_3$ . (3-57)

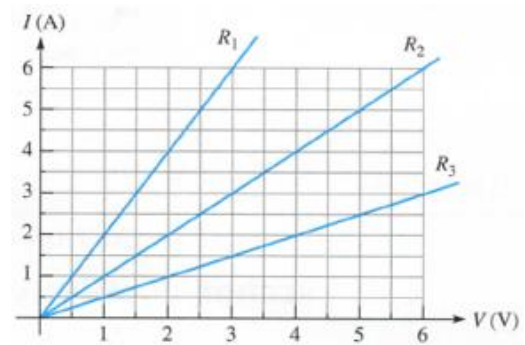


Figure 6

9. If a  $300\text{ W}$  bulb is allowed to burn continuously for 30 days, how many kilowatt-hours of energy does it use? (3-61)

10. The rheostat in Figure 7 is used to control the current to a heating element. When the rheostat is adjusted to a value of  $8\ \Omega$  or less, the heating element can burn out. What is the rated value of the fuse needed to protect the circuit if the voltage across the heating element at the point of maximum current is  $100\text{ V}$ ? (3-65)

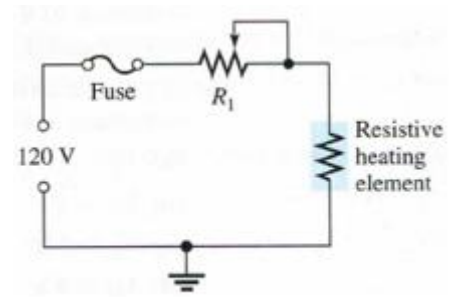


Figure 7