**Name:** _____ **Class:** _____ **Date:** _____ **ID: B**

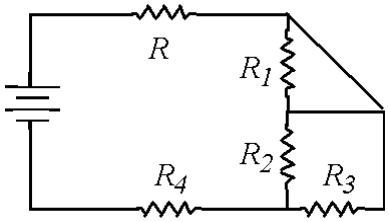
## quiz3-1bw10

### Multiple Choice

*Identify the letter of the choice that best completes the statement or answers the question.*

____ 1. A nichrome wire has a radius of 0.50 mm and a resistivity of $1.5 \times 10^{-6}$ Ω·m. If the wire carries a current of 0.50 A, what is the potential difference per unit length along this wire?
a. 0.003 V/m
b. 0.95 V/m
c. 1.6 V/m
d. 1.9 V/m
e. 7.4 V/m

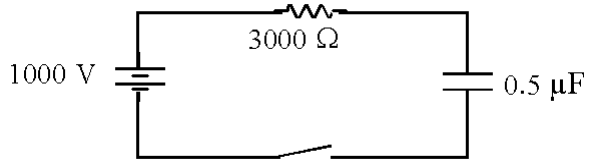
____ 2. Which resistor is in series with resistor R?




a. R1
b. R2
c. R3
d. R4
e. None of the four resistors above is valid.

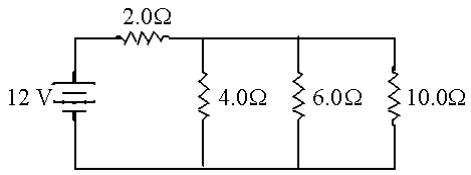
____ 3. An electric toaster requires 1 100 W at 110 V. What is the resistance of the heating coil?
a. 7.5 Ω
b. 9.0 Ω
c. 10.0 Ω
d. 11.0 Ω
e. 13.0 Ω

____ 4. A 1 000-V battery, a 3 000-Ω resistor and a 0.50-$\mu$F capacitor are connected in series with a switch. The capacitor is initially uncharged. What is the value of the current the moment after the switch is closed?



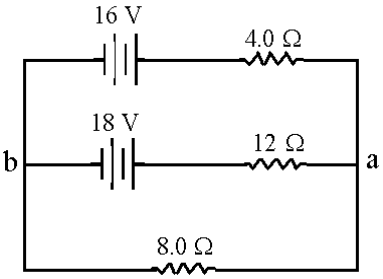

a. 0.39 A
b. 0.33 A
c. 0.84 A
d. 2 000 A
e. 1.0 A

____ 5. Three resistors connected in parallel have individual values of 4.0, 6.0 and 10.0 Ω, respectively. If this combination is connected in series with a 12-V battery and a 2.0-Ω resistor, what is the current in the 10-Ω resistor?




a. 0.59 A
b. 1.0 A
c. 11 A
d. 16 A
e. 23 A

____ 6. What is the potential difference between points a and b?




a. 6 V
b. 8 V
c. 12 V
d. 24 V
e. 27 V

____ 7. If a metallic wire of cross sectional area $3.0 \times 10^{-6}$ m$^2$ carries a current of 6.0 A and has a mobile charge density of $4.24 \times 10^{28}$ carriers/m$^3$, what is the average drift velocity of the mobile charge carriers? (charge value = $1.6 \times 10^{-19}$ C)

a. $3.4 \times 10^{3}$ m/s
b. $1.7 \times 10^{3}$ m/s
c. $1.5 \times 10^{-4}$ m/s
d. $2.9 \times 10^{-4}$ m/s
e. $1.2 \times 10^{-1}$ m/s

____ 8. How long is a wire made from a volume 100 cm$^3$ of copper if its resistance is 8.5 ohms? The resistivity of copper is $1.7 \times 10^{-5}$ Ω·m.

a. 7.1 m
b. $1.7 \times 10^{2}$ m
c. $2.2 \times 10^{2}$ m
d. $3.0 \times 10^{3}$ m
e. $4.7 \times 10^{3}$ m

# quiz3-1bw10
# Answer Section

## MULTIPLE CHOICE

1. ANS: B DIF: 2 TOP: 17.5 Resistivity
2. ANS: D DIF: 2
   TOP: 18.1 Sources of emf, 18.2 Resistors in Series, 18.3 Resistors in Parallel
3. ANS: D DIF: 2 TOP: 17.8 Electrical Energy and Power
4. ANS: B DIF: 2 TOP: 18.5 RC Circuits
5. ANS: A DIF: 3
   TOP: 18.1 Sources of emf, 18.2 Resistors in Series, 18.3 Resistors in Parallel
6. ANS: C DIF: 3
   TOP: 18.4 Kirchhoff's Rules and Complex DC Circuits
7. ANS: D DIF: 2
   TOP: 17.2 A Microscopic View: Current and Drift Speed
8. ANS: A DIF: 3 TOP: 17.5 Resistivity