Exam

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) In an electroplating process, copper (ionic charge +2e, atomic weight 63.6) is deposited using a current of 10 A. What mass of copper is deposited in 10 minutes?

    A) 3.96   B) 0.99   C) 2.52   D) 1.98   E) 2.52

2) Nichrome wire, often used for heating elements, has resistivity of $1.0 \times 10^{-6}\ \Omega \cdot m$ at room temperature. What length of No. 30 wire (diameter 0.250 mm) is needed to wind a resistor that has 50 ohms at room temperature?

    A) 2.45 m   B) 0.61 m   C) 3.66 m   D) 22.4 m   E) 6.54 m

Situation 26.1

The density of free electrons in gold is $5.90 \times 10^{28}\ m^{-3}$. The resistivity of gold is $2.44 \times 10^{-8}\ \Omega \cdot m$ at a temperature of 20 °C and the temperature coefficient of resistivity is $0.004\ (°C)^{-1}$. A gold wire, 0.8 mm in diameter and 20 cm long, carries a current of 300 ma.
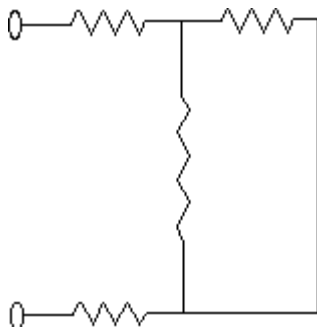
3) In Situation 26.1, the power dissipated in the wire is closest to:

    A) 0.7 mW   B) 0.1 mW   C) 0.9 mW   D) 0.3 mW   E) 0.5 mW

4) In Situation 26.1, the drift velocity of the electrons in the wire is closest to:

    A) $8.0 \times 10^{-5}\ m/s$

    B) $1.0 \times 10^{-4}\ m/s$

    C) $6.0 \times 10^{-5}\ m/s$

    D) $1.2 \times 10^{-4}\ m/s$

    E) $1.4 \times 10^{-4}\ m/s$

Figure 27.5
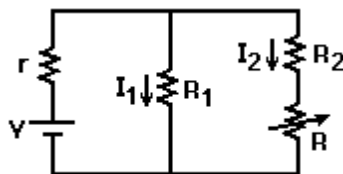
5) In Figure 27.5, the circuit R is a variable resistance. As R is decreased

    A) I_1 increases, I_2 increases.

    B) I_1 decreases, I_2 decreases.

    C) I_1 remains unchanged, I_2 increases.

    D) I_1 increases, I_2 decreases.

    E) I_1 decreases, I_2 increases.

6) A 2.0–V battery that can store 200.0 J of energy is connected to a resistor. How much electrical charge must flow between the battery's terminals to completely drain the battery if it is fully charged?

    A) 400 C   B) 100 C   C) 0.01 C   D) 0.02 C

7) Each of the resistors in the circuit shown have a resistance of 180.0 Ω. What is the equivalent resistance of the circuit?

A) 540.0 Ω   B) 450.0 Ω   C) 720.0 Ω   D) 180.0 Ω

1) D
2) A
3) C
4) C
5) E
6) B
7) B