Name _____ Date _____

Honors Physics Electric Circuits WS #4H

Period _____ Mrs. Nadworny

A

Electrical Power & Energy

Directions: Read online textbook pages 708 – 713. Solve the following problems using the GUESS method and proper significant figures. Be sure to show ALL work.

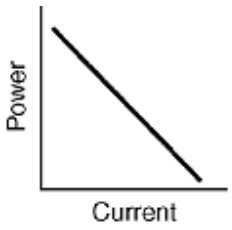
1. As the potential difference across a given resistor is increased, the power expended in moving charge through the resistor

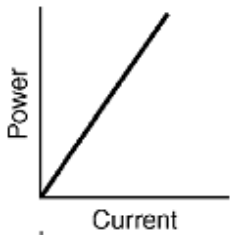
   (A) increases (B) decreases (C) remains the same

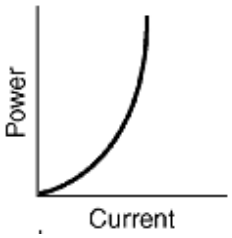
2. One watt is equivalent to one

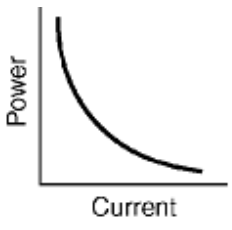
   (A) N • m (B) J • s (C) N/m (D) J/s

3. Which graph best represents the relationship between the electrical power and the current in a resistor that obeys Ohm's Law

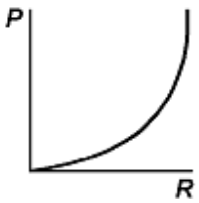
(A) 

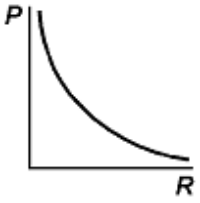
(B) 

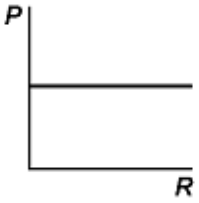
(C) 

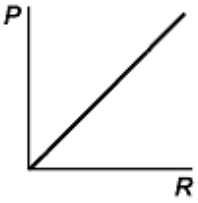
(D) 

4. The potential difference applied to a circuit element remains constant as the resistance of the element is varied. Which graph best represents the relationship between power (P) and resistance (R) of this element?

(A) 

(B) 

(C) 

(D) 

5. An electric doorbell provides 2.3 ohms of resistance in a circuit. The current through the doorbell is 1.8 A.
   a. What is the power rating of the doorbell?

   b. How much electric energy does the doorbell convert in 1.5 seconds?

Continued on next page

6. The resistance of a light bulb connected across the terminals of a 120 V outlet is 220 Ω. At what rate does the bulb convert electric energy to light?

7. What is the current through a 75 W light bulb connected to a 120 V outlet?

8. The current through the starter motor of a car is 210 A. If the battery keeps 12 V across the motor, what electrical energy is delivered to the starter in 10.0 s?

9. A portable compact disc player receives its energy from a 9.0 V cell. The current used to operate the player is 135 A.
    a. How much power in watts does the CD player use?

    b. How much energy does the CD player used to play a section 3.0 minutes long?

Answers in size order: 0.63, 7.5, 11, 65, 1200, 25,000, 2.2×10^5