Self-assessment

Ohm's law

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PR3/A2: Self-training material for enriching current online experiments

1. What does Ohm's Law state about the relationship between voltage and current in a conductor?
    a) Voltage is inversely proportional to current
    b) Voltage is directly proportional to current
    c) Voltage is equal to current divided by resistance
    d) Voltage is inversely proportional to resistance

2. If the resistance of a circuit is 10 Ω and the voltage applied is 20 V, what is the current flowing through the circuit?
    a) 1A
    b) 2A
    c) 0,5A
    d) 3A

3. Which of the following is the correct formula for calculating resistance using Ohm's Law?
    a) $R = V / I$
    b) $R = I / V$
    c) $R = V * I$
    d) $R = V^2 / P$

4. In the vector form of Ohm's Law, which of the following represents the current density vector?
    a) j
    b) E
    c) σ
    d) R

5. During an experimental verification of Ohm's Law, what would you expect the V/I ratio to be if the law holds true?
    a) It would vary
    b) It would be constant
    c) It would increase with voltage
    d) It would decrease with current

6. Which physical quantity is measured in Ohms (Ω)?
    a) Current
    b) Voltage
    c) Resistance
    d) Power

7. Using Ohm's Law, what is the power dissipated in a circuit with a current of 3 A and a resistance of 4 Ω?
    a) 12W
    b) 36W
    c) 48W

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      d) 9W

8. If a resistor has a length of 1 meter and a cross-sectional area of 1 m², what does the resistance equal?
   a) Resistivity (ρ)
   b) Conductance (G)
   c) Voltage (V)
   d) Current (I)
9. Which of the following limitations applies to Ohm's Law?
   a) It cannot be used for calculating power in a circuit
   b) It does not apply to unilateral networks
   c) It is not applicable to resistive materials
   d) It can only be used for non-electrical circuits
10. What analogy is used to explain Ohm's Law where voltage is likened to water pressure and current to the amount of water flow?
    a) Temperature analogy
    b) Water pipe analogy
    c) Highway analogy
    d) Heat flow analogy

Right answer:
1. B
2. B
3. A
4. A
5. B
6. C
7. B
8. A
9. B
10. B