QUIZIZZ Worksheets

Name

Mastering Current Electricity Concepts

Total questions: 15

Class

Worksheet time: 8mins

Instructor name: Dr. Ramanathan Saitechinfo

Date

1. What is Ohm's Law and how is it mathematically expressed?

    a) R = V - I

    b) Ohm's Law is V = I * R.

    c) I = V + R

    d) V = R / I

2. State Kirchhoff's First Law and provide an example.

    a) The total current in a circuit is always zero regardless of junctions.

    b) The total voltage entering a junction equals the total voltage leaving it.

    c) Kirchhoff's First Law states that the total current entering a junction equals the total current leaving it.

    d) The total resistance at a junction is equal to the sum of individual resistances.

3. Explain Kirchhoff's Second Law with a practical application.

    a) The sum of currents in a closed loop equals the sum of the voltages across components.

    b) Kirchhoff's Second Law states that energy is conserved in electrical circuits.

    c) The total resistance in a circuit is equal to the sum of the individual resistances.

    d) Kirchhoff's Second Law states that the sum of the emf in a closed loop equals the sum of the potential drops across components.

4. How is electrical power calculated in a circuit?

    a) P = V + I

    b) P = I - V

    c) P = V × I

    d) P = V / I

5. What is the relationship between voltage, current, and resistance in a circuit?

 a) Voltage is the same as current (V = I)

 b) Current is independent of voltage and resistance

 c) Resistance is equal to voltage divided by current (R = V / I)

 d) Voltage is equal to current multiplied by resistance (V = I * R).

6. Define series and parallel circuits and their key differences.

 a) In series circuits, the voltage is divided among components, while in parallel circuits, it remains constant across all components.

 b) Series circuits have multiple paths for current, while parallel circuits have a single path.

 c) Series circuits have a single path for current, while parallel circuits have multiple paths.

 d) Parallel circuits are always more efficient than series circuits regardless of the components used.

7. How do you calculate total resistance in a series circuit?

 a) R_total = R1 + R2 + R3 + ... + Rn

 b) R_total = R1 - R2 - R3 - ... - Rn

 c) R_total = R1 * R2 * R3 * ... * Rn

 d) R_total = 1/(1/R1 + 1/R2 + 1/R3 + ... + 1/Rn)

8. What is the formula for total resistance in a parallel circuit?

 a) 1/R_total = R1 + R2 + R3 + ... + Rn

 b) R_total = R1 * R2 * R3 * ... * Rn

 c) 1/R_total = 1/R1 + 1/R2 + 1/R3 + ... + 1/Rn

 d) R_total = R1 + R2 + R3 + ... + Rn

9. Explain the concept of capacitance and its unit of measurement.

 a) The farad is a measure of electrical resistance.

 b) Capacitance is measured in ohms (Ω).

 c) The unit of measurement for capacitance is the farad (F).

 d) The unit of measurement for capacitance is the volt (V).

10. How does the capacitance of a capacitor change with the area of the plates?

 a) The capacitance decreases with the area of the plates.

 b) The capacitance remains constant regardless of the area of the plates.

 c) The capacitance is only affected by the distance between the plates.

 d) The capacitance increases with the area of the plates.

11. What is resistivity and how does it relate to conductivity?

   a) Resistivity measures temperature, while conductivity measures pressure.

   b) Resistivity increases with higher temperatures, while conductivity decreases with lower temperatures.

   c) Resistivity is the opposition to current flow in a material, while conductivity is its ability to conduct current; they are inversely related.

   d) Resistivity is the same as resistance, and conductivity is unrelated to it.

12. Describe the factors that affect the resistivity of a material.

   a) Surface area and color

   b) Temperature, material composition, impurities, and structural properties.

   c) Magnetic field strength

   d) Voltage and current levels

13. How do you calculate the power dissipated in a resistor?

   a) $P = V^2 / R$ or $P = I^2 * R$

   b) $P = V * R$

   c) $P = R / V$

   d) $P = V + I$

14. What is the significance of the equivalent capacitance in a circuit?

   a) It is used to measure the resistance of a circuit.

   b) The equivalent capacitance allows for easier analysis and calculation of total capacitance in circuits with multiple capacitors.

   c) It determines the voltage across each capacitor in a circuit.

   d) It indicates the power consumption of the circuit.

15. How does temperature affect the resistivity of conductors?

   a) Temperature increases resistivity in conductors.

   b) Higher temperatures decrease resistivity in conductors.

   c) Resistivity is only affected by material type, not temperature.

   d) Temperature has no effect on resistivity.

Answer Keys

1. b) Ohm's Law is V = I * R.

2. c) Kirchhoff's First Law states that the total current entering a junction equals the total current leaving it.

3. d) Kirchhoff's Second Law states that the sum of the emf in a closed loop equals the sum of the potential drops across components.

4. c) P = V × I

5. d) Voltage is equal to current multiplied by resistance (V = I * R).

6. c) Series circuits have a single path for current, while parallel circuits have multiple paths.

7. a) R_total = R1 + R2 + R3 + ... + Rn

8. c) 1/R_total = 1/R1 + 1/R2 + 1/R3 + ... + 1/Rn

9. c) The unit of measurement for capacitance is the farad (F).

10. d) The capacitance increases with the area of the plates.

11. c) Resistivity is the opposition to current flow in a material, while conductivity is its ability to conduct current; they are inversely related.

12. b) Temperature, material composition, impurities, and structural properties.

13. a) P = V^2 / R or P = I^2 * R

14. b) The equivalent capacitance allows for easier analysis and calculation of total capacitance in circuits with multiple capacitors.

15. a) Temperature increases resistivity in conductors.