

- 1) The internal resistances of an ideal voltmeter and an ideal ammeter are respectively (ideal meaning the behavior of the system is not changed when using the meter)
 - a. zero and zero.
 - b. infinite and infinite.
 - c. zero and infinite.
 - d. infinite and zero

- 2) Three resistors, each with resistance R_1 , are in series in a circuit. They are replaced by one equivalent resistor, R . Comparing this resistor to the first resistor of the initial circuit, which of the following is true?
 - a. The current through R equals the current through R_1 .
 - b. The voltage across R equals the voltage across R_1 .
 - c. The power given off by R equals the power given off by R_1 .
 - d. R is less than R_1 .

- 3) If $R_1 < R_2 < R_3$, and if these resistors are connected in series in a circuit, which one dissipates the greatest power?
 - a. R_1
 - b. R_2
 - c. R_3
 - d. All are equal in power dissipation

- 4) Three resistors, each with resistance R_1 , are in parallel in a circuit. They are replaced by one equivalent resistor, R . Compare this resistor to the first resistor of the initial circuit. Which of the following statements is true?
 - a. The current through R equals the current through R_1 .
 - b. The voltage across R equals the voltage across R_1 .
 - c. The power given off by R equals the power given off by R_1 .
 - d. R is greater than R_1 .

- 5) Three resistors, each of different value, are used in a circuit with a power source supplying 12 volts. For which of the following resistor combinations is the total power supplied the greatest?
 - a. all three resistors in series
 - b. all three resistors in parallel
 - c. two of the resistors in parallel with the third resistor in series with the parallel pair
 - d. This cannot be found until it is known which resistor is in series with the parallel pair.

- 6) Kirchhoff's rules are the junction rule and the loop rule. Which of the following statements is true?
 - a. Both rules are based on the conservation of charge.
 - b. Both rules are based on the conservation of energy.
 - c. The junction rule is based on the conservation of charge, and the loop rule is based on the conservation of energy.
 - d. The junction rule is based on the conservation of energy, and the loop rule is based on the conservation of charge.