McRoberts Secondary

Circuits Unit Retest 2025-01-21

Personal Data

Family Name:

Given Name:

Signature:

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Registration Number

0 1 2 3 4 5 6 7 8 9

In this section **no** changes or modifications must be made!

Scrambling 0 0

Type: 020

Exam ID(Physics 11): 25012100001

Please mark the boxes carefully: ☒ Not marked: ☐ or ■

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Only clearly marked and positionally accurate crosses will be processed!

Answers 1 - 15

	a	b	c	d
1	☐	☐	☐	☐
2	☐	☐	☐	☐
3	☐	☐	☐	☐
4	☐	☐	☐	☐
5	☐	☐	☐	☐
6	☐	☐	☐	☐
7	☐	☐	☐	☐
8	☐	☐	☐	☐
9	☐	☐	☐	☐
10	☐	☐	☐	☐
11	☐	☐	☐	☐
12	☐	☐	☐	☐
13	☐	☐	☐	☐
14	☐	☐	☐	☐
15	☐	☐	☐	☐
	a	b	c	d

Answers 16 - 20

	a	b	c	d
16	☐	☐	☐	☐
17	☐	☐	☐	☐
18	☐	☐	☐	☐
19	☐	☐	☐	☐
20	☐	☐	☐	☐
	a	b	c	d

1. The current flowing in an electric circuit can be increased by

   a. increasing voltage and decreasing resistance
   b. decreasing voltage and increasing resistance
   c. increasing voltage and increasing resistance
   d. decreasing voltage and decreasing resistance

2. An ammeter is connected in _____ and a voltmeter is connected in _____.

   a. series, series
   b. series, parallel
   c. parallel, series
   d. parallel, parallel

3. A battery is rated at $3.7\,\mathrm{V}$ and $2100\,\mathrm{mAh}$. How much energy does the battery store at full charge?

   a. $14.7\,\mathrm{kJ}$
   b. $22.4\,\mathrm{kJ}$
   c. $28\,\mathrm{kJ}$
   d. $31.2\,\mathrm{kJ}$

4. What voltage is applied across a $2.7\,\Omega$ resistor if the current is $5.8\,\mathrm{A}$?

   a. $4.8\,\mathrm{V}$
   b. $13\,\mathrm{V}$
   c. $0.44\,\mathrm{V}$
   d. $16\,\mathrm{V}$

5. A lamp draws a current of $8.5\,\mathrm{A}$ when it is connected to a $6.4\,\mathrm{V}$ source. What is the resistance of the lamp?

   a. $1.3\,\Omega$
   b. $0.75\,\Omega$
   c. $0.67\,\Omega$
   d. $54\,\Omega$

6. A lamp with a resistance of $6.8\,\Omega$ is placed across a potential difference of $8.5\,\mathrm{V}$. What is the current through the lamp?

   a. $30\,\mathrm{A}$
   b. $0.8\,\mathrm{A}$
   c. $58\,\mathrm{A}$
   d. $1.2\,\mathrm{A}$

7. A voltage source of $6.1\,\mathrm{V}$ delivers a current of $6.2\,\mathrm{A}$ to an electric motor that is connected across its terminals. What power is consumed by the motor?

   a. $66\,\mathrm{W}$
   b. $0.98\,\mathrm{W}$
   c. $62\,\mathrm{W}$
   d. $38\,\mathrm{W}$

8. An electronic device is powered by a $4.4\,\mathrm{V}$ battery. The current used to operate the device is $190\,\mathrm{mA}$. How much energy does the device use in $9.4\,\mathrm{minutes}$?

   a. $7.9\,\mathrm{J}$
   b. $470\,\mathrm{J}$
   c. $110\,\mathrm{J}$
   d. $7900\,\mathrm{J}$

9. As more resistors are added in **series** to a constant voltage source, the power supplied by the source

   a. increases.
   b. decreases.
   c. remains the same.
   d. not enough information.

10. Three resistors are connected in **series**. Their resistances are $33\,\Omega$, $66\,\Omega$, and $78\,\Omega$. What is the equivalent resistance of the resistors?

    a. $95\,\Omega$
    b. $160\,\Omega$
    c. $220\,\Omega$
    d. $180\,\Omega$

11. When different resistors are connected in parallel, it is true that

    a. the power dissipated in each is the same.
    b. the potential difference across each is the same.
    c. their equivalent resistance is greater than the resistance of one of the resistors.
    d. the same current flows in each one.

12. You have a $60\,\mathrm{W}$ light bulb and a $100\,\mathrm{W}$ light bulb. Instead of connecting them the normal way, you make a circuit that places them in series across the normal household voltage. Which statement is correct?

    a. Both bulbs glow at the same reduced brightness.
    b. Both bulbs glow at the same increased brightness.
    c. The $100\,\mathrm{W}$ bulb glows brighter than the $60\,\mathrm{W}$ bulb.
    d. The $60\,\mathrm{W}$ bulb glows brighter than the $100\,\mathrm{W}$ bulb.

13. A total of 495 resistors, all with resistance $147\,\Omega$, are connected in **parallel**. What is the equivalent resistance of the resistors?

    a. $0.3\,\Omega$
    b. $0.38\,\Omega$
    c. $0.41\,\Omega$
    d. $0.34\,\Omega$

14. A total of 169 Christmas light bulbs, all with resistance $0.52\,\Omega$, are connected in **series**. What is the equivalent resistance of the lights?

    a. $88\,\Omega$
    b. $110\,\Omega$
    c. $120\,\Omega$
    d. $50\,\Omega$

15. Two resistors are connected in **parallel**. Their resistances are $220\,\Omega$ and $415\,\Omega$. A battery applies $4.2\,\text{V}$ to the combination. What is the current through the $220\,\Omega$ resistor?

    a. $16\,\text{mA}$
    b. $19\,\text{mA}$
    c. $14\,\text{mA}$
    d. $12\,\text{mA}$

16. Two resistors are connected in **series**. Their resistances are $4\,\Omega$ and $1\,\Omega$. A difference in potential of $18\,\text{V}$ is applied to the combination. What is the current through the $1\,\Omega$ resistor?

    a. $2.8\,\text{A}$
    b. $2.4\,\text{A}$
    c. $3.6\,\text{A}$
    d. $3.2\,\text{A}$

17. Two resistors are connected in **parallel**. Their resistances are $36\,\Omega$ and $37\,\Omega$. A battery applies $16\,\text{V}$ to the combination. What is the current drawn from the battery?

    a. $1.6\,\text{A}$
    b. $1.2\,\text{A}$
    c. $0.88\,\text{A}$
    d. $1\,\text{A}$

18. Three resistors are connected in **parallel**. Their resistances are $52\,\Omega$, $61\,\Omega$, and $79\,\Omega$. What is the equivalent resistance of the resistors?

    a. $14\,\Omega$
    b. $19\,\Omega$
    c. $21\,\Omega$
    d. $16\,\Omega$

19. A $400\,\text{mA}$ current flows into a parallel combination of a $93\,\Omega$ and a $71\,\Omega$ resistor. What current flows through the $93\,\Omega$ resistor?

    a. $150\,\text{mA}$
    b. $170\,\text{mA}$
    c. $140\,\text{mA}$
    d. $310\,\text{mA}$

20. When a battery with an emf of $2.5\,\text{V}$ supplies a $0.39\,\text{A}$ current, its terminal voltage is $1.2\,\text{V}$. What is the internal resistance of the battery?

    a. $2.5\,\Omega$
    b. $6.5\,\Omega$
    c. $4.2\,\Omega$
    d. $3.3\,\Omega$