

# McRoberts Secondary

Circuits Unit Test 2025-12-17



## Personal Data

Family Name:

Given Name:

Signature:

checked

## Registration Number

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| 1 | <input type="checkbox"/> | 1 |
| 2 | <input type="checkbox"/> | 2 |
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| 8 | <input type="checkbox"/> | 8 |
| 9 | <input type="checkbox"/> | 9 |

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

## Scrambling

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Type  
020

Exam ID(Physics 11)  
25121700003

Please mark the boxes carefully:  Not marked:  or

This document is scanned automatically. Please keep clean and do not bend or fold. For filling in the document please use a **blue or black pen**.

**Only clearly marked and positionally accurate crosses will be processed!**

### Answers 1 - 15

|    | a                        | b                        | c                        | d                        |
|----|--------------------------|--------------------------|--------------------------|--------------------------|
| 1  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| 13 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|    | a                        | b                        | c                        | d                        |

### Answers 16 - 20

|    | a                        | b                        | c                        | d                        |
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| 16 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| 18 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|    | a                        | b                        | c                        | d                        |





1. Which device can be used to measure the current in a circuit?
  - a. voltmeter
  - b. ohmmeter
  - c. ammeter
  - d. currentometer
2. Car batteries are rated in “amp-hours”. This is a measure of their
  - a. electric charge
  - b. current
  - c. energy density
  - d. energy capacity
3. A battery is rated at 12 V and 1100 mAh. How much energy does the battery store at full charge?
  - a. 88.4 kJ
  - b. 48 kJ
  - c. 41 kJ
  - d. 27.9 kJ
4. What voltage is applied across a  $4\Omega$  resistor if the current is 7.8 A?
  - a. 40 V
  - b. 31 V
  - c. 2 V
  - d. 6.6 V
5. A lamp draws a current of 8 A when it is connected to a 7.5 V source. What is the resistance of the lamp?
  - a.  $0.94\Omega$
  - b.  $16\Omega$
  - c.  $1.1\Omega$
  - d.  $60\Omega$
6. A lamp with a resistance of  $6.8\Omega$  is placed across a potential difference of 8.5 V. What is the current through the lamp?
  - a. 0.65 A
  - b. 0.8 A
  - c. 0.96 A
  - d. 1.2 A
7. A voltage source of 8 V delivers a current of 5.3 A to an electric motor that is connected across its terminals. What power is consumed by the motor?
  - a. 42 W
  - b. 37 W
  - c. 29 W
  - d. 7 W

8. A space heater with a resistance of  $9.3\ \Omega$  operates at a voltage of  $117\text{V}$ . How much energy does the space heater use in 9.1 hours?
- 6.7 kWh
  - 13 kWh
  - 8.2 kWh
  - 9.6 kWh
9. As more resistors are added in **series** to a constant voltage source, the power supplied by the source
- increases.
  - decreases.
  - remains the same.
  - not enough information.
10. Three resistors are connected in **series**. Their resistances are  $68\ \Omega$ ,  $60\ \Omega$ , and  $38\ \Omega$ . What is the equivalent resistance of the resistors?
- $17\ \Omega$
  - $140\ \Omega$
  - $320\ \Omega$
  - $170\ \Omega$
11. When different resistors are connected in series, it is true that
- the potential difference across each is the same.
  - the power dissipated in each is the same.
  - the same current flows in each one.
  - the total resistance is equal to the greatest resistance of any individual resistor.
12. You have a  $5\ \Omega$  light bulb and a  $10\ \Omega$  light bulb. You make a circuit that places them in series across a battery. Which light bulb is brighter?
- The  $5\ \Omega$  bulb is brighter.
  - The  $10\ \Omega$  bulb is brighter.
  - Both bulbs glow at the same brightness.
  - It depends on the voltage.
13. A total of 993 resistors, all with resistance  $765\ \Omega$ , are connected in **parallel**. What is the equivalent resistance of the resistors?
- $0.5\ \Omega$
  - $0.59\ \Omega$
  - $0.77\ \Omega$
  - $0.41\ \Omega$
14. A total of 945 Christmas light bulbs, all with resistance  $817\ \Omega$ , are connected in **series**. What is the equivalent resistance of the lights?
- $850\text{ k}\Omega$
  - $1100\text{ k}\Omega$
  - $770\text{ k}\Omega$
  - $960\text{ k}\Omega$

15. Two resistors are connected in **parallel**. Their resistances are  $465\Omega$  and  $414\Omega$ . A battery applies 1.6 V to the combination. What is the current through the  $465\Omega$  resistor?
- 3.8 mA
  - 2.2 mA
  - 3.4 mA
  - 5.5 mA
16. Two resistors are connected in **series**. Their resistances are  $5\Omega$  and  $8\Omega$ . A difference in potential of 31 V is applied to the combination. What is the current through the  $8\Omega$  resistor?
- 1.5 A
  - 2.4 A
  - 2.1 A
  - 3.2 A
17. Two resistors are connected in **parallel**. Their resistances are  $15\Omega$  and  $35\Omega$ . A battery applies 95 V to the combination. What is the current drawn from the battery?
- 7.7 A
  - 9 A
  - 14 A
  - 11 A
18. Three resistors are connected in **parallel**. Their resistances are  $28\Omega$ ,  $89\Omega$ , and  $33\Omega$ . What is the equivalent resistance of the resistors?
- $17\Omega$
  - $13\Omega$
  - $22\Omega$
  - $9.3\Omega$
19. A 600 mA current flows into a parallel combination of a  $95\Omega$  and a  $67\Omega$  resistor. What current flows through the  $95\Omega$  resistor?
- 250 mA
  - 170 mA
  - 370 mA
  - 340 mA
20. When a battery with an emf of 9.7 V supplies a 1.7 A current, its terminal voltage is 5.9 V. What is the internal resistance of the battery?
- $4.2\Omega$
  - $2.2\Omega$
  - $3.9\Omega$
  - $1.5\Omega$