Science 9

Physics Practice Test

Name: Key
Date:
Block:

This practice test is designed to help you determine what concepts you DO know and more importantly what concepts you DO NOT know!

Go through the practice test THREE times:

(1) On your own ***(2) With your notes*** ***(3) With another student***

Each time, if you cannot answer a question, draw a circle around it to identify that you should review this concept when preparing for the test.

True or False: Identify the following statements as true or false. If FALSE, rewrite the UNDERLINED word(s) with the correction

1. T Electrical potential difference is often called voltage and measured in volts

2. F Electrons flow from the cathode ~~(positive terminal)~~ to the anode ~~(negative terminal)~~
   anode Cathode

3. F A ~~charged~~ material has an equal distribution of positive and negative charges
   uncharged / neutral

4. F A copper wire is an example of an ~~insulator~~
   Conductor

5. T Water, geothermal, and wind are examples of renewable (sustainable) energy

Multiple Choice: Choose the BEST answer

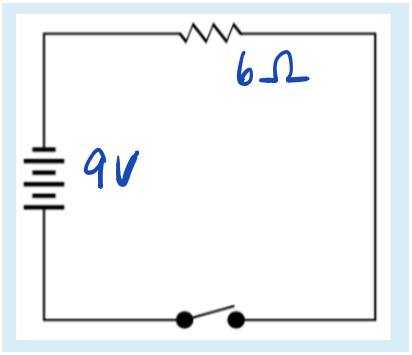
C 6. The part of a complete circuit that converts electricity into other forms of energy is known as the

   a. Control
   b. Resistor
   c. Load
   d. Source

B 7. Which of the following is NOT a requirement for an electric circuit?

a. A continuous pathway ✓
b. A switch
c. A conductor ✓
d. A source ✓

C 8. In the following circuit diagram, the battery has a charge of 9V and the resistor has a resistance of 6 Ω. What is the current through the circuit?



$I? = \frac{V}{R} = \frac{9\,V}{6\,\Omega}$

$= 1.5\,A$

Series circuit current (amps) stays the same

SASS

a. 0.67 A
b. 3 A
c. 1.5 A
d. 72 A

A 9. A parallel circuit has three 5 V loads. What is the total voltage across each of the loads in the circuit?

a. 5 V
b. 15 V
c. 1.67 V
d. 0.6 V

Parallel circuit, voltage stays the same

PVSS

A 10. Which of the following materials has the lowest conductivity?

a. Plastic
b. Copper
c. Water
d. Glass

D 11. Which of the following best describes the movement of electrons around a series circuit?

a. The electrons take one of several possible paths - parallel
b. The electrons give up equal amounts of energy as they pass through each branch of the circuit - parallel
c. The current is higher near the power source than anywhere else in the circuit
d. The electrons follow the same path around the circuit - parallel

B 12. If you used a 4000 W dish washer for 0.75 hours, how many kilowatt-hours of electrical energy would you have used?

a. 2.5 kWh
b. 3.0 kWh
c. 4.5 kWh
d. 5.0 kWh

$4000W \times \frac{1\,kW}{1000\,W} = 4\,kW$

Power = kW x hours

= 4 kW x 0.75 hours

= 3.0 kWh

Completion

Word Bank	
~~Light~~	~~Heat~~
~~Series~~	~~Circuit~~
~~Switch~~	~~Resistance~~

1. An arrangement of electrical components through which electrons follow an unbroken path is known as a _____circuit_____
2. You can start and stop the current around a circuit by inserting a _____switch_____ into the circuit
3. The _____resistance_____ of a material is the property that determines how difficult it is to force an electric current through the material
4. When electrons have only one possible route and can follow only one path, the circuit is called a _____series_____ circuit
5. Electrical devices convert electrical energy into other forms of energy, such as _____light_____ and _____heat_____

Short Answers

1. Explain the relationship between negative charges, positive charges, electrons, and protons. Describe what sometimes happens in terms of charges when you rub two different types of materials together

   Protons have a positive charge and electrons have a negative charge. When you rub two different materials together, the electrons from one material are transferred to the other, creating charged materials

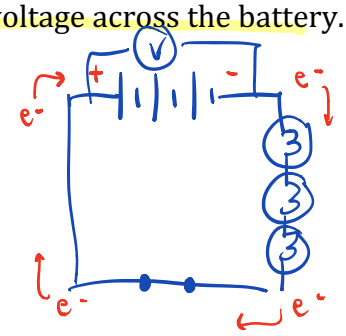
2. What is a purpose of a load?

   - A load converts electrical energy to other forms of energy (ex. lightbulb, fan, etc.)
   - A load prevents a short circuit.

3. Why is it important to wire a home with a circuit where all loads are connected in parallel?

   It's important to wire a home with parallel circuits so that if there's a break in the current at one spot, there are still alternative pathways for the current to flow. A parallel circuit also allows individual loads to be controlled by individual switches.

4. Draw a circuit diagram with three lightbulbs connected in series, a switch, a battery, and a voltmeter measuring the voltage across the battery. Use arrows to indicate the direction of current flow.



5. An electric motor has a resistance of 185Ω. It is connected to a power source that has a potential difference of 120 V. Calculate the current that flows through the motor. Show your work, and make sure your final answer has the appropriate units!

$R = 185\ \Omega$

$V = 120\ V$

$I = ?\ A$

$I = \frac{V}{R}$

$I = \frac{120\ V}{185\ \Omega}$

$\boxed{I = 0.649\ A}$

6. What is electrical power and how is it measured?

Electrical power is the rate that electrical energy is used by a load. It is measured in watts (W) or kilowatts (kW)

7. What information does a smart meter relay to the utility company?

A smart meter measures the amount of electrical energy used in a building/home over the course of a day.

8. If a family goes away on vacation, why might electrical energy still be consumed in their home?

Phantom loads occur when electrical energy is still being used on a device even when it's turned off

Test Breakdown:

True/False with corrections /5

Multiple choice /15

Short answers /20

} /40

Bonus +2