PS Physics **Chapter 7 Review** Test Date _____

Review the main ideas of Chapter 7 on page 217 of your text book.

Matching: Not all terms will be used.

J 1. Allow electrons to move through it easily

F 2. Closed path through which electrons flow

G 3. Accumulation of electric charges on an object

Q 4. Circuit with more than one path

D 5. Tendency of a material to oppose electron flow

O 6. Does not allow electricity to move through it easily

L 7. Rate at which electrical energy is changed to another energy form

N 8. Flow of electrons through a conductor

P 9. Circuit with only one path

M 10.Unit of electrical energy

I 11. Current is equal to the voltage difference of a circuit by its resistance

A 12. Car battery

E 13. Metal rod that directs lightning to Earth

R 14. Device that detects electric charges

A. Wet cell

B. Voltage difference

D. Resistance

E. Lightning rod

F. Circuit

G. Static electricity

H. Dry Cell

I. Ohm's Law

J. Conductor

K. Electric field

L. Electric power

M. Kilowatt hour

N. Electric current

O. Insulator

P. Series

Q. Parallel

R. Electroscope

Choose the correct term;

15. A negatively charged object has (***more***, *fewer*) electrons than an object that is neutral.

16. Electrons flow from areas of (***higher***, *lower*) voltage to areas of (higher, lower) voltage.

17. Voltage difference is measure in (*amperes*, ***volts***).

18. Electrons passing through a lamp (*gain,* ***lose***) some voltage as they light the lamp.

19. Voltage (***varies***, *is the same*) in all parts of a series circuit.

20. The current in a circuit is measure in (*volts,* ***amperes***).

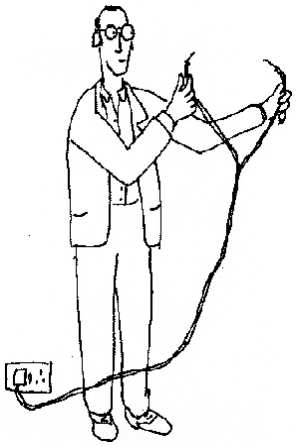
21. Current is almost always the flow of (***electrons***, *protons*).

22. Resistance is measured in (***ohms***, *volts*).

23. Copper has a (*higher,* ***lower***) resistance to electron flow than plastic.

24. According to Ohms' law, (***I =V/R***, *V =I/ R*).

25. The symbol for ohm is (***Ω***, *O*)



26. A wire with a resistance of 3 ohms has a (*greater,* ***lesser***) resistance to electron flow than a wire with a resistance of 5 ohms.

27. Current has only one loop to flow through in a (*parallel,* ***series***) circuit.

28. A power rating lists the (*voltage,* ***watts***) required to operate an appliance.

29. A dry cell is used in a flashlight to convert (***electrical energy***, *static electricity*).

30. Two positive charge will (***repel***, *attract*) one another.

Multiple Choice:

C 31. Electric charge that has accumulated on an object is referred to as

A. Current electricity B. Circuit electricity
C. Static electricity D. Current circuit

B 32. A static discharge differs from an electric current in that a static discharge

A. is a flow of electrons
B. Lasts for only a fraction of a second
C. Results because a force is exerted on the electrons
D. Involves the movement of ions as well as electrons

B 33. The rate at which an electrical device converts energy from one form to another is called

A. Electrical energy B. Electrical power
C. Electrical resistance D. Voltage regulation

A 34. Lightning is

A. a very large discharge of static electricity
B. a buildup of neutrons
C. low voltage electric current
D. Harmless

C 35. One source of constant electric current is a ___.

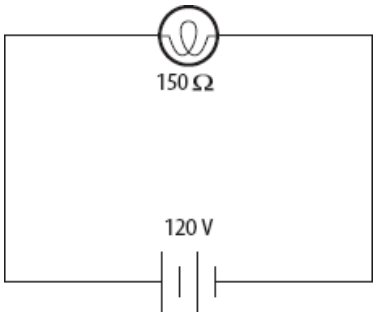
A. Switch B. Transformer C. Dry cell D. Coulomb

B 36. The current in a circuit can be

A. increased by increasing the resistance.
B. increased by increasing the voltage.
C. decreased by decreasing the resistance.
D. decreased by increasing the voltage.

B 37. Which of the following causes the leaves of an electroscope to spread apart?

A. opposite charges on each leaf
B. like charges on each leaf
C. no charge on either leaf
D. Charge on one leaf, no charge on the other.



B 38. What is the current flowing through this circuit?

A. 1.25 amps B. 0.80 amps
C. 30 amps D. 120 amps

A 39. What is the power consumed by the light bulb in this circuit?

A. 96 watts B. 1.25 watts C. 1.25 kW D. 96 kW

C 40. Which of the following substances is an electrical conductor?

A. glass B. paper C. gold D. rubber

Matching:

Match the words in the first column to the correct unit in the second column.

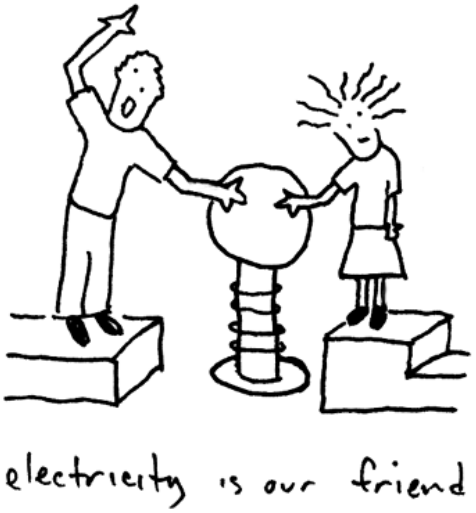
D 41. potential difference A. ohm

A 42. resistance B. ampere

C 43. Electrical energy C. kWh

B 44. current D. volt

E 45. power E. watt



Short Answer Essay:

What are the three components that make up a circuit?

Current, voltage, resistance

Compare series and parallel circuits.

Components connected in series are connected along a single path, so the same current flows through all of the components. Components connected in parallel are connected so the same voltage is applied to each component. In a series circuit, every device must function for the circuit to be complete and in parallel circuits, each light has its own circuit, so all but one light could be burned out, and the last one will still function.

Practice Problems:

What is the current of a circuit that has 3 V and 0.5 ohm of resistance?

I = 3 volts/0.5 ohms = 6 amps

What is the voltage if current is 0.5 A and resistance is 0.8 ohm?

V = (0.5 amps)(0.8 ohms) = 0.4 volts

What is the resistance if voltage is 3.0 V and current is 1.5 A?

R = 3 volts/ 1.5 amps = 2 ohms

A 60 watt car spotlight is showing a drain of 5.5 amps on the ammeter. What is the voltage?

V = 60 watts / 5.5 amps = 10.9 volts

My laptop uses 50 watts and I use it on average 8 hours a day. If the electric company charges $0.07 per kWh, how much does it cost to use my laptop for the school week (5 days)?

P = (0.5 kWatts)(8 hours)(5 days)($0.07) = $0.14 or 14 cents

The load across a 50 volt battery consists of a series combination of two lamps with resistances of 125 Ω and 225 Ω.

Find the total resistance of the circuit. **R = 125 + 225 = 350 ohms**

Find the current in the circuit. **I = 50 volts/350 ohms = 0.14 amps**

Find the voltage drop across each lamp.

V = (0.14 amps(125 ohms) **V = (0.14 amps)(225 ohms)**

V = 17.86 volts **V = 32.14 volts**

Two resistances, one 6 Ω and the other 8 Ω, are connected in parallel. The resistors are then connected to a 12 volt battery.

What is the current through each resistor? **I=12 v/6 Ω** **I=12 v/8 Ω**

I= 2 amps **I = 1.5 amps**

What is the total current in the circuit? ? **I= 2 A + 1.5 A =3.5 amps**

What is the equivalent resistance of the parallel combination?

R = 12 volts/3.5 amps = 3.43 ohms