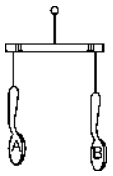
Name _____**Key**_____**date** _____ **period** ____

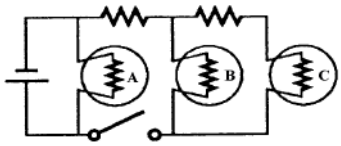
P. Sci. Unit 6 Test Electricity Study Guide

1. Most of the electrical energy used by a toaster is converted to
   a. heat energy b. mechanical energy c. chemical energy d. light energy
2. What might make the spoons attract each other? What might make the spoons repel each other?



Attract – if one spoon was positively charged and the other was negatively charged
Repel – if both spoons were positively charged or if both were negatively charged.

3. Most of the circuits in your h
4. If a 75 W light bulb operates at a voltage of 115 V, what is the current in the bulb? P = I x V or I = P/V = 0.65 A
5. Current that reverses direction in a regular pattern is called Alternating current or AC .
6. The SI unit of resistance is the Ohm or Ω
7. Every charged particle produces an electric field
8. Copper is an example of a good (conductor / insulator).
9. A set of electric trains are powered by a 9V battery. What is the resistance of the trains if they draw 3.0 A of current? V = I x R or R = V/I so R = 9V / 3.0 A = 3Ω
10. There is an attractive force between two charged objects when their charges are opposite or are of unlike signs



11. What type of circuit is pictured in the above diagram? It is a parallel circuit
    Which bulb(s) will have a current in the schematic diagram above? Only A will have current because with B & C there is a break in the path
12. Potential differences cause (protons / electrons) to move from the (negative / positive) terminal to the (negative / positive) terminal.
13. What is the best way to produce static electricity on the surface of the balloon? Rub it on your hair, silk or wool
14. Potential difference is measured in Volts
15. Mr. Robinson and his seventh-grade science class are conducting an experiment. The class needs to choose a good insulator. What type of material could be used as an insulator? Any material that does not conduct electricity, glass, wood, rubber, plastic, etc.
16. There is a potential difference of 12 V across a resistor with 0.25 A of current in it. The resistance of the resistor is V = I x R or R = V / I so R= 12V / 0.25A = 48Ω
17. What does it mean if the leaves of an electroscope spread apart? It means the electroscope has received a charge (the charge travels down the conductor to the foil leaves – they are both charged with the same charge so they will repel each other)
18. What would make a good electrical conductor? Any material that allows its electrons to flow – mostly metals
19. The brightness of a light bulb is determined by its filament's
    a. resistance. b. voltage. c. current.

A **B**

Figure 20-4

20. What charge is source A? __- (negative)__ how do you know? The field lines are positive and are attracted to the source so the source must be negative
21. What charge is source B? __+ (positive)__ how do you know? The field lines are positive and are repelled from the source so the source must be positive.
22. Which of the sources in figure 20-4 would repel a negative charge? __A__ Which of the sources would repel a positive charge? __B__
23. What type of current is produced by a battery? __Direct current or DC__ What type of current is produced by the plug in the wall? __alternating current or AC__
24. There is a potential difference of 15 V across a resistor with 1.4 A of current in it. What is the resistance of the resistor? V = I x R or R = V / I so 15V / 1.4 A = 10.71Ω
25. An electrical conductor has electrons that __flow easily__ and an electrical insulator has electrons that are __tightly bound__ to its atoms.
26. Explain how the following three devices that provides electrical safety work:
    a) circuit breaker – bent metal which when becomes overheated pops straight opening the circuit
    b) fuse – thin metal strip when it becomes overloaded heats up and melts thus opening the circuit
    c) ground-fault circuit interrupter – monitors current flowing to and from an outlet – if it is unequal the GFCI opens the circuit to prevent electric shocks
27. An electric toaster has a power rating of 1100 W at 110 V. What is the resistance of the heating coil? P = I x V or I = P/V so I = 1100 / 110 = 10A then V = I x R or R = V/I so R = 110V / 10A = 11Ω
28. The resistance of a conductor is (high / low) while the resistance of an insulator is (high / low)
29. After Peter removes his sweater by pulling it over his head, he notices that his hair is standing straight up. What causes this to occur? accumulation of electrons – static electricity
30. A resistor has a resistance of 2.3 Ω. How much current is in the resistor if there is a potential difference of 11.5 V across the resistor? V = I x R or I = V / R so I = 11.5V / 2.3 = 5A
31. Electric field lines point towards a __negative__ charge, away from a __positive__ charge and never __cross__ each other.
32. When there is an equal amount of positive and negative charges on an object, the object is __neutral__
33. Electric force is similar to gravity but electric force varies depending on the __size or degree__ of the charge and the __distance between the charged objects__
34. Current is the rate at which charges move through a(n) __conductor__
35. How many paths through which charge can flow would be shown in a circuit diagram of a series circuit? __1__ How many paths would be shown in a circuit diagram of a parallel circuit? __2 or more__
36. A 150 Ω resistor has 0.10 A of current in it. What is the potential difference across the resistor? V = I x R so 0.10A x 150 Ω = 15V
37. Explain how the following can be used to charge a neutral object:
    a) friction – rubbing 2 objects together
    b) contact – touching a charged object to a neutral object and some of the charge changes objects.
    c) induction – bringing a charged object near a neutral object and that pushes some of the charged particles in the neutral object around
40. Current that reverses direction is called __alternating current__ or __AC__ .
41. Current that does NOT reverse direction is called __Direct current__ or __DC.__