Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Electricity Review**

**A. Fill in the blanks** (use the following list)

alternating current ammeter ampere charging by contact

charging by friction charging by induction conductor current electricity

electrical resistance electroscope energy source grounding

induced charge separation insulator law of electric charges load

negatively charged object neutral object ohm Ohm’s law

parallel circuit positively charged object potential difference series circuit

static electricity switch volt voltmeter

1. Charging by \_\_\_\_\_\_\_\_\_\_ causes electrons in a neutral object to move.
2. A(n) \_\_\_\_\_\_\_\_\_\_ is a material that prevents the flow of current.
3. In a series circuit, a light bulb is referred to as the \_\_\_\_\_\_\_\_\_.
4. The opposite of static electricity is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. The name of the instrument used to measure static electricity is a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
6. Lightning is created by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
7. Charged objects attract neutral objects, opposite charges attract, and same charges repel are the three postulates of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
8. To measure the amount of electrons moving past a point in a circuit you would need to use a(n) \_\_\_\_\_\_\_\_\_\_\_\_.
9. Potential difference is measured using a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_ in units of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
10. Connecting wire, a load, an energy source and a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_ are the four components of a circuit.
11. **True or False** (If the statement is false, rewrite the statement to make it true)
12. Tap water is a good insulator of electricity because it contains dissolved salts and charged particles.
13. In charging by induction, electrons are transferred between the objects.
14. Static electricity refers to the movement of electrons in a closed path.
15. When the thickness of a wire increases, the resistance of the wire decreases.
16. An ammeter must be connected in parallel with a circuit to take accurate readings.
17. The wires in the heating element of a hair dryer have relatively high resistance.
18. **Similarities/Differences** (describe similarities/differences between each pair)
19. static electricity, current electricity 18. insulator, conductor

19. series circuit, parallel circuit 20. ammeter, voltmeter

21. charging by contact, induction 22. lightning, grounding

**D. Multiple choice** (Choose the best answer)

23. Which of the following materials would make the best insulator?

a) pure water

b) wooden peg

c) iron nail

d) copper wire

24. Which of the following is an example of charging by induction?

a) static cling on clothes

b) attracting paper with a charged rod

c) rubbing a balloon on a sweater

d) charging an electroscope by touching it

25. Neutral objects can become charged by

a) gaining or losing neutrons

b) gaining or losing protons

c) gaining or losing electrons

d) gaining or losing protons, neutrons, or electrons

26. Which factor best explains why lightning strikes the ground?

a) metals conduct the current electricity to the ground

b) friction between the cloud and the ground

c) electrostatic discharge between cloud and Earth

d) charging by friction and direct contact

27. Which of the following refers to the path along which electrons can flow?

a) circuit

b) current

c) potential difference

d) resistance

28. Which device is used to measure the potential difference across a load?

a) ammeter

b) ohmmeter

c) voltmeter

d) circuit breaker

29. Which of the following units is used to measure current?

a) amperes

b) volts

c) watts

d) joules

**E. Diagrams**

30. With use of a diagram, draw and explain how you can create an induced charge in a neutral electroscope by using a piece of fur and ebonite rod.

**BEFORE DURING AFTER**

31. With use of a diagram, draw and explain how you can create a permanent charge in a neutral electroscope by using a piece of fur and ebonite rod.

**BEFORE DURING AFTER**

32. With use of a diagram, draw and explain how an induced separation charge forms and how a lightning bolt occurs.

33. With use of a diagram, draw a series circuit that has 4, 1.5 V cells, 3 light bulbs, 1 ammeter between light 2 and 3, 1 voltmeter across light three and one switch.

34. With use of a diagram, draw a circuit that has 1, 1.5 V cell, 3 light bulbs and 1 motor in parallel, each with a switch that controls each item and a voltmeter that measures the potential difference of the motor.

**F. Calculations. Show FULL solutions!**

35. A current of 0.50 A flows through a light bulb, when a potential difference of 120 V is placed across  
 the light bulb. What is the resistance of the light bulb?

36. A colour television has a resistance of 80 Ω. How much current passes through the television when  
 it is plugged in to a 120 V wall socket?

37. A toaster connected to a 110 V power source has 6.0 A of current flowing through it. How much  
 power is dissipated as heat?

38. How much energy does the motor of a 615 W refrigerator use in one day, if it runs for 14 hours a  
 day?