Exam Review – Electricity Unit

- 1. Fill in the blanks to describe how objects would interact using the words "attract", "repel" or "do not attract or repel"
 - a) Negatively charged pith ball and negatively charged rod repel
 - b) Neutral pith ball and neutral rod do not attract or repel
 - c) Positively charged pith ball and neutral rod attract
 - d) Negatively charged pith ball and positively charged rod attract
- 2. Use the electrostatic series below to answer the following questions:



3. Make the square negative and the circle neutral. Draw an arrow to show which way the electrons would move.

· charging by contact same charge

What is the charge on the circle after touching the square? _____ hega tive_____



4. Match the following terms to the definitions below: current, voltage, resistance, and energy. Then complete the rest of the table.

Term	Definition	Symbol	Unit
Voltage.	The force that moves electrons in a circuit.	. V	voits (v)
Energy	The capacity to do work.	E	Joule (J)
Current	The rate at which electrons flow through a circuit.	I	Amps (A)
Resistance	The ability to slow the flow of electrons in a circuit.	R	ohm

5. Draw a circuit diagram with a 3 cell battery, a closed switch, and 2 light bulbs in series. Also add an ammeter to your diagram to measure the current in the circuit.

series one loop



- If one light bulb burned out, what would happen to the other bulb?
 - will go out

6. Draw a circuit diagram with 1 cell, a motor, and a light bulb in parallel. Add an open switch so that the motor is turned off but the light still works. Draw a voltmeter across the light to measure the voltage drop.



7. A 3V battery sends a current of 0.10 A through a light bulb. What is the resistance of the filament of the light bulb?



- 8. Calculate the voltage drop across a load with a resistance of 500 Ω that has a current of 1.4 A flowing through it.
- V = ? $V = I \times R$ $= (I.4A)(500 \ L)$ I = 1.4A $I = (I.4A)(500 \ L)$ I = 700V $V = I \times R$ I = Voltagc I = 1.4A I = 700V
- 9. Determine the percent efficiency of an electric motor that uses 15 000J of electrical energy to produce 11 500 J of useful mechanical energy.

% efficiency =
$$\frac{\text{output}}{\text{input}} \times 100$$
 .: the efficiency
= $\frac{11500 \text{ J}}{1500 \text{ J}} \times 100$
= $\frac{11500 \text{ J}}{1500 \text{ J}} \times 100$

10. a) What is the purpose of circuit breakers and fuses?

b) ^a How is a fuse different from a circuit breaker?

11. Describe the difference between a conductor and an insulator, and give an example of each.

allows é to K How through it ag metal is resists plow of é is en rubber