

NAME:

CLASS:

# KEY

## 4-6 REVIEW

### PART A TRUE AND FALSE

For each of the following questions, answer either true or false and correct the question when the answer is false.

1. F Most cells have a voltage of 2.3v. 1.5v
2. F A wet cell that is made in the lab using a salt solution and two copper metals will produce voltage. 1 copper / 1 other metal
3. T Thermocouples are useful for measuring materials at high temperatures. \_\_\_\_\_
4. F A battery is an example of a wet cell. dry cell
5. F A cell is two or more batteries placed together. battery / cell
6. F If you want your flashlight to last a long time but you don't care about how bright it is, you should place your batteries in series. parallel

### PART B SHORT ANSWER

Which device would be used for the following energy transfer:

- (a) Chemicals to electricity (1.5V)? battery (electro-chemical cell)
- (b) Heat to electricity? Thermocouple
- (c) Pressure to electricity? piezoelectric
- (d) Light to electricity? Solar panel



3. Compare and contrast the following terms: (you may want to draw pictures)
  - a. Wet Cells vs. Dry Cells

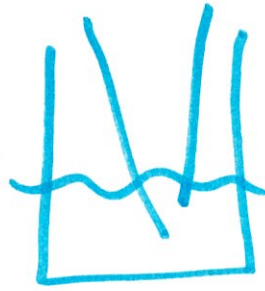
liquid electrolyte

paste electrolyte

b. Electrolyte vs. Electrodes

liquid

metals



c. Primary Cells vs. Secondary Cells

non-rechargeable

rechargeable

d. Anode vs. Cathode

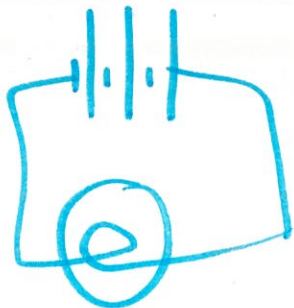
negative electrode

positive electrode

**PART C PROBLEM SOLVING**

4. Three dry cells are connected first in series and then in parallel and then hooked to the light bulb. For each, draw out the circuit, tell what the maximum voltage will be, and explain an advantage and a disadvantage for using batteries in a series and batteries in parallel.

Series	Parallel
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$V = 4.5V$

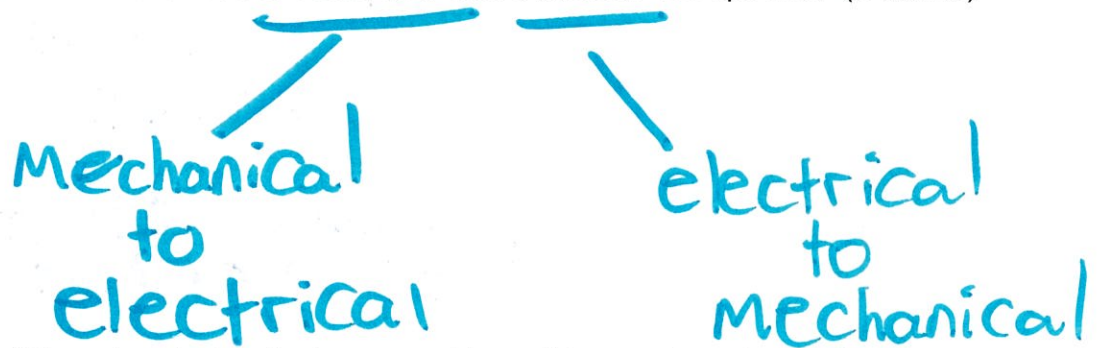
Advantage:	very bright
Disadvantage:	drains faster



$V = 1.5V$

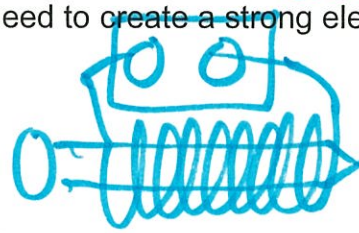
Advantage:	lasts longer
Disadvantage:	only 1.5V - less bright

7. What is the difference between a **Generator** and a **Motor**? Be specific. (3 marks)



8. Describe two different materials that you would need to create a strong electromagnet. Why are these parts important? (4 marks)

Iron & copper



#### Alternating and Direct Current (5 marks)

9. Classify each statement as applying to direct current (DC) or alternating current (AC).

DC (a) flows in one direction

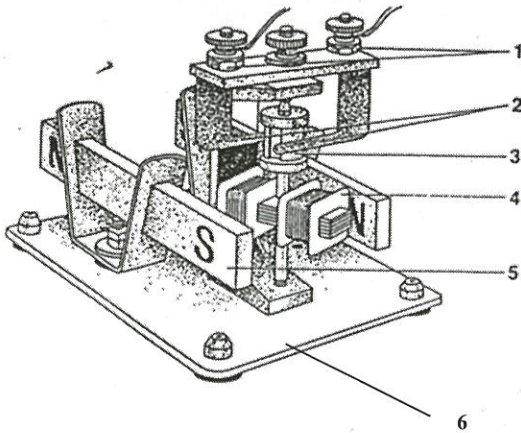
AC (c) used in the power grid

DC (d) produced by electrochemical cells and batteries

DC (f) supplied to generators and motors through a split-ring commutator



10) Fill in the blanks and answer the following questions.



14. The name of this motor is the St. Louis and it uses direct current. The electricity enters into the motor by the (1) posts and then travels down into the (2) brushes. These are responsible for passing electricity to commutator.

After that, the electricity continues to the (3) Split ring Commutator which turns on the (4) armature. This then gets repelled by the (5) Permanent Magnet. The device then spins on the (6) base.

11) How does the split ring commutator work? What is its purpose? Be specific. (2 mark)

splits. stops flow of e<sup>-</sup> to ensure it only flows 1 direction

12) Explain what an electromagnet is. (draw a photo if needed)

battery

12b. How could I increase the magnetism of my electromagnet (how do I make it stronger?)

- 1) increase coils
- 2) use copper
- 3) increase voltage