

Homework Set - DC Circuits

Readings pp. 587-610, 614
 § 20.1 - 20.11, 20.14

Vocabulary to be familiar with:

- | | |
|-----------------------------------|------------------------------|
| <i>direct current</i> | <i>electromotive force</i> |
| <i>alternating current</i> | <i>piezo electric</i> |
| <i>Ohm's Law</i> | <i>thermo electric</i> |
| <i>resistance/resistivity</i> | <i>electro chemical cell</i> |
| <i>electromagnetic</i> | <i>photoelectric</i> |
| <i>Kirchoff's Laws</i> | <i>catholde/anode</i> |
| <i>series and parallel wiring</i> | <i>schematic diagram</i> |

Questions

#3,5,7,8,10,11,14,15

Supplementary Questions:

- 1.) How does current relate to resistance in a typical circuit?
- 2.) When emf's are added in series, what is the result?
- 3.) How could you make a lemon battery while stranded on a tropical island?
- 4.) What are the four basic voltage sources described in class? Give an example of each (4pts)

Problems

#1, 4, 7, 10, 17, 23, 24, 39, 46, 51, 54, 59, 63, 67, 77

Extra: (max of 5pts)

Problems: #9, 20, 57,85, 116

Outlines		10
Questions		15
Problems		20
Extra/Other		
Total		45

Other Questions you need to be able to answer:

1. What is current? What is it measured in?
2. Explain the direction of current flow. Why can this be confusing?
3. What is the speed of current through a wire?
5. What is the relationship between resistance and temperature? length? area?
6. List the 4 basic circuit elements, their symbols, and an example of each in real life.
7. List four types of voltage sources, explain how they work, and give an example of each in the real world.
8. How does one determine energy delivered to a circuit element?
9. How does one determine the power dissipated by a circuit element?
10. Explain what *series* and *parallel* circuits are.
11. Discuss the effects of combining voltage sources in *series* and *parallel*.
12. Describe how voltmeters and ammeters are used (and placed into a circuit).
13. State Ohm's Law in words and as a mathematical expression. What are *ohms* a measure of?
14. What is internal resistance and how does it effect circuits?
15. Draw a schematic diagram of two 1.5 V cells in series, a switch, and two lamps in parallel.
16. How would eight 40W bulbs in a chandelier connected? Draw a schematic diagram. How much would it cost to keep the chandelier lit for on month (at 1.5 hours each day) if the cost of electric energy is 0.12¢ per kWh?
17. Compare and contrast DC and AC current.
18. How are Kirchoff's laws a restatement of the conservation of energy and the conservation of charge?