**Ch. 16 Electrical Systems homework questions**

Instructions

Create space in the Word document below, and type your answers using complete sentences. When you are finished, submit your work as an email attachment.

(5 parts, 100 points possible)

1. How Electricity Works (p. 394-398)
   1. In an electrical system, what is the *pressure* called?
   2. What is the *flow of electrons* called?
   3. What is the *resistance to flow* called?
   4. Write the equation for *Ohm’s Law*:
   5. What residential voltage is used on the East Coast?
   6. What residential voltage is used on the West Coast?
   7. Fig 16.3: What is the purpose of an electrical substation?
   8. Fig 16.4: What is the cannister-shaped object hanging on the telephone pole?
   9. According to Figs 16.7 - 16.9, what is the amperage provided to a typical modern home?
   10. The main panel is the control center for all the circuits in a house. What 2 items does it contain?
   11. In a house, what is meant by a “circuit”?
   12. What does the “grounding wire” do?
   13. Fig 16.11: Explain how the grounding wire protects the woman in this scenario.
   14. For the house in Fig 16.10, in what room does the main panel appear to be located?
2. Wiring Materials (p. 399)
   1. What type of cable is used in virtually all houses today?

For questions b-d, refer to Fig 16.15:

* 1. What are the allowable amps, using a 14-gauge copper wire?
  2. What size circuit breaker is typically used with 14-gauge cable?
  3. Say you need to supply 50 amps to an electric range.

1. What is the minimum size *copper wire* you must use?
2. What is the minimum size *aluminum wire* you must use? (assuming you are allowed to use aluminum wire, which you aren’t in San Diego)
3. Electrical System Design (p. 400-402)

For questions a-d, refer to Fig 16.16:

* 1. In the house plans shown, how many light fixtures are in the bedroom?
  2. How many wall outlets are in the bedroom?
  3. What type of light fixture is on the Front Porch?
  4. What electrical device is located right over, and just inside, the bedroom door?
  5. Fig 16.17: In laying out a room, what is the *maximum* distance allowed between wall receptacles (wall outlets)?

For questions f-i, refer to the list of circuits on p. 402:

* 1. How many circuits does this house have? (count carefully!)
  2. How many amps does the electric range require (draw)?
  3. How many amps does each light and receptacle circuit require?
  4. What device will probably use most of the electricity in this house?

1. Read “Rough-In Electrical Installation” and “Finish Electrical” on your own.
2. Building Green with Electrical (p. 406)
   1. List at least 3 ways in which consumption of electricity in a building can be minimized.
   2. Explain what is meant by “Daylighting”.