Electrical Connections – Chapter 6

Read Chapter 6 and complete the following:

1. What is the difference in resistance between a well made connection and a poorly made connection?
2. Name two ways to strip the coating off an insulated wire.
3. What are two important things to remember when attaching wires to terminal screws?
4. What is a benefit to using crimp-type connectors when joining wires?
5. Give examples of three mechanical connectors.
6. What type of connector is generally used for larger cable installations?
7. What type of connector is commonly found in household electrical outlets?
8. How is a set-screw connector different from a twist-on connector?
9. Two ways to insulate electrical connections are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The easier of the two is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ insulation requires \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
10. What is the difference between soldering and mechanical connections?
11. What is a reason for soldering a connection? When would you not want to solder a connection?
12. What is the purpose of flux? What is the easiest way to use flux when you are soldering?
13. What safety precautions must be taken when soldering?
14. What is “tinning”?
15. Name two differences between a soldering gun and a soldering iron.
16. What does a well made soldered connection look like?

PRACTICAL (P1) Locate the package on Soldering. Watch the video and complete the questions. Have your instructor check your work and initial your activity sheet.

1. Where are two places where you could find cable connectors at home?
2. How are wires in cables protected from electromagnetic and radio interference ?
3. What are two different ways to attach connectors to shielded coaxial cable?
4. How do you solder fiber optic cable?

PRACTICAL (P2) Locate the solderless connectors, coaxial cable connectors, wire and crimpers from your supplies. Cut 4 pieces of wire 10cm long. Attach two pieces together using a pre-insulated butt connector. On the other ends of the same wire, attach a male and female connector using proper procedures. Join the two remaining pieces of wire together using a Western Union splice on both ends, creating a loop. Solder ONLY ONE OF THE SPLICES. Have the instructor check your work, compare it to the exemplars, and initial your activity sheet.

**Simple, Series and Parallel Circuits – Chapter 7**

Watch the video clip “Series and Parallel Circuits” and read chapter 7.

1. What can happen to a circuit if a protection device is not present?
2. Name two types of protection devices used in house wiring.
3. Why are conductors usually insulated?
4. Give examples of three control devices found in a house wiring setup.
5. Different types of diagrams are used to show different circuits in different ways. Which diagram gives the least detail about actual construction, but does more to explain the function of each segment of the circuit?
6. There are many symbols used in creating schematic diagrams. Fill in the following chart with the appropriate symbol.

|  |  |  |  |
| --- | --- | --- | --- |
| Component | Symbol | Component | Symbol |
| Battery |  | Lamp |  |
| AC Current Source |  | LED |  |
| Push Button Switch |  | Capacitor |  |
| Open Switch |  | Resistor |  |
| Closed Switch |  | Diode |  |
| Buzzer |  | Cds Cell |  |
| Bell |  | Variable Resistor |  |

**Read and complete the 130 in One Electronics Lab Tutorial and the Multimeter Tutorial.**

PRACTICAL (P9) a) Build a simple circuit on your lab board. Use a switch, and one LED. Measure the voltage at the source, across the switch when it is closed and across the LED when it is powered. Draw the schematic for your circuit and record the values you measure on the activity sheet.

b) Build a series circuit using a switch, and two LEDs. Measure the voltage at the source, across the switch and across each LED. Draw the schematic for your circuit and record the values you measure on the activity sheet. Make sure you label the LEDs as L₁, L₂, etc. Disconnect one wire between two of the lamps and record the results.

c) Build a parallel circuit using a switch and two LEDs. Measure the voltage at the source, across the switch and across each LED. Draw the schematic for your circuit and record the values you measure on the activity sheet. Make sure you label the LEDs as L₁, L₂, etc. Disconnect one wire between two of the lamps and record the results.

\*\*\*Show your teacher your activity sheet when you are finished and have it initialed.

PRACTICAL (P10) Using your soldering iron and tools, disassemble a device which contains electronic elements. There should be a supply of computers and peripherals available to you, but you could bring something from home, providing you have permission from home and your instructor.\*\*\*Whatever you bring in is not likely to ever work again. Make sure everyone concerned knows this!!!!\*\*\* Disassembly should follow these steps: remove the case; attempt to follow the path the electricity takes to make the device operate; attempt to diagnose any obvious problem; remove the power transformer, if possible; separate any boards or components which may by attached by screws, edge connectors, ribbon cables; attempt to disassemble some electronic components by melting solder and carefully removing the component. Make sure you keep all of your parts in a plastic tub and that you clean up after each session. You will be allowed to work on this project for as long as your instructor feels you need, or for as long as you are making good use of your time. Make a brief notation about what you accomplish each day and have your instructor initial and date your activity sheet at the end of each class

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***Occupational Connection Worksheet (P11)***

Complete an Occupational Connection Sheet for this module. The purpose of the worksheet is to develop an understanding of how the activities undertaken in this module may be connected to an occupation. Your research may come from several sources. A speaker may come to your class to talk about electronics in the role of their occupation. You may chose to research the Alberta Learning Information Service ([www.alis.alberta.ca](http://www.alis.alberta.ca)) or any other Canadian information service. The role electronics takes in the occupation may be direct and obvious, or it may be indirect or just a small component of. When you finish your Occupational Connection Worksheet, go over it with your instructor and have them initial your activity sheet.