Name:_____ Contestant Number:_____ School:_____

University of Wyoming "Cowboy Classic" Fall 2013
Agriculture Technology and Mechanical Systems Career Development Event
Electrical Systems Skill

Summer time is finally here and farmer Ted has hired you as a worker on his custom harvesting operation. One of your first tasks is to fix the lights in the shop where maintenance is done on the equipment. Recently, a new electrical circuit was installed consisting of a duplex receptacle with a light and a single pole single throw **(SPST)** switch further down the line of the circuit. **Using the multi-meter that is provided, check each individual component of the circuit for continuity and identify where the problem may exist.**

**** The wire nut on the neutral leg in the switch has been removed for testing purposes, it is not to be considered a fault of the circuit.**

Questions:

1. Do each of the conductors originating from the power source to the duplex receptacle have proper continuity? **Yes or No**

   Hot ___Y_____ Neutral _____Y_____ Ground ____Y_____

2. Do each of the conductors originating from the duplex receptacle to the SPST switch have proper continuity? **Yes or No**

   Hot _____Y____ Neutral _____N_____ Ground _____Y____

3. Do each of the conductors originating from the SPST switch to the light have proper continuity? **Yes or No**

   Hot ____Y_____ Neutral ____Y_____ Ground ____Y_____

4. Does continuity exist across the SPST switch? _____Y_____

5. After analyzing the circuit, where does a problem exist?

   The neutral conductor from the SPST switch to the light has insulator material intact under the neutral screw on the SPST switch blocking the electrical circuit.

(Continue Questions on Back)

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Problem 2:

After you have fixed the lights in the shop, you have determined that the lights on the combine you have been assigned are not working. The battery is charged and the ignition switch and starter are in working order. The bulbs have all been replaced recently and are likely not the problem. You decide to check the continuity across the light switch to ensure that power is flowing through it when it is turned on. Using the provided multi-meter and wiring diagram found on the shop table answer the following questions.

Questions:

6. Does continuity exist across the light switch? **Yes or No** _____Y_____

7. Identify two other potential problems from the wiring diagram that could exist.

   The 15 amp fuse could have blown

   The ground wire could be disconnected.

   The conductors could be faulty.

Criterion	Points Possible	Points Earned
Questions	28	
Safety	2	

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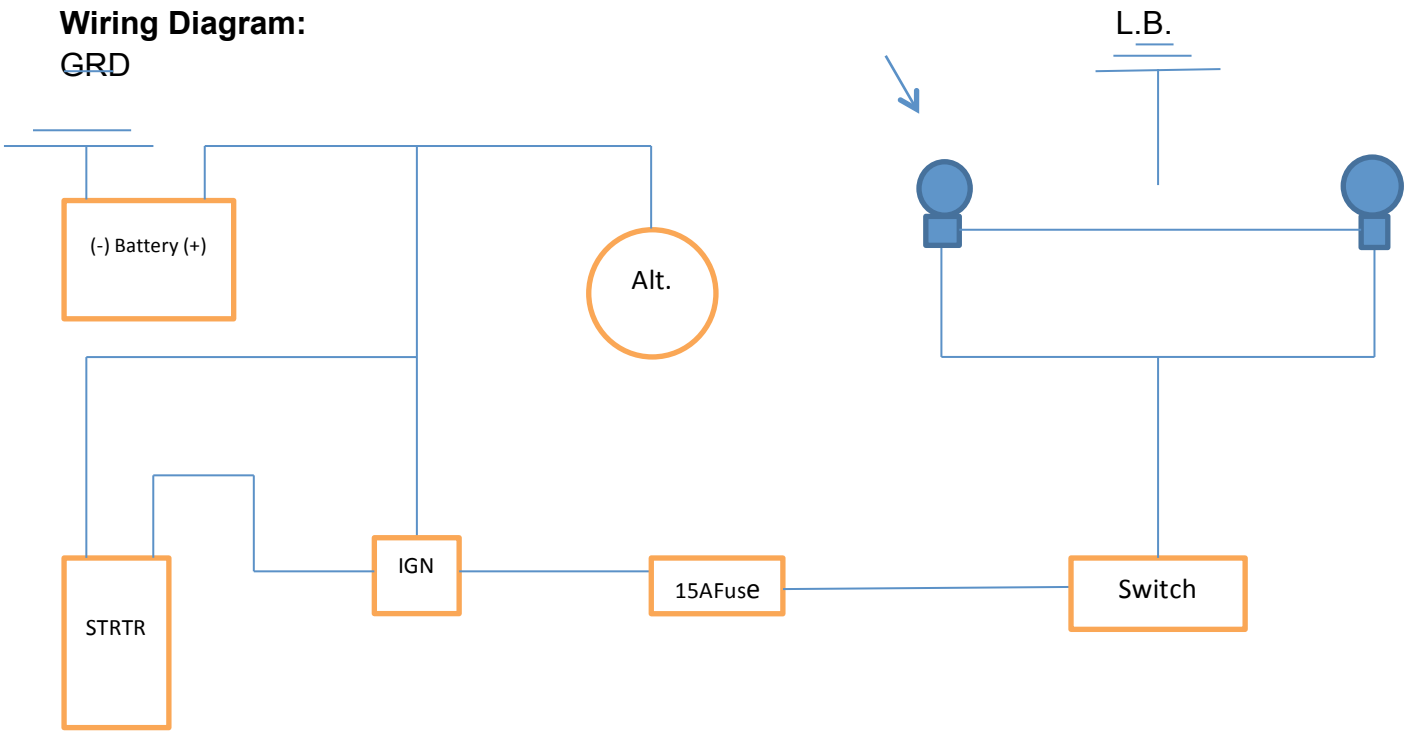
Wiring Diagram:



Key: Alt. = alternator, IGN. = ignition switch, STRTR = starter solenoid, L.B. = light bulb, GRD = ground