

PLC121 LAB 2.1: TRANSFORMER CIRCUITS

Student Name: _____

Student ID: _____

LAB OUTCOMES:

Upon completion of this lab procedure, the student should be able to:

1. Verify the resistance on windings of a single phase transformer.
2. Test the continuity between the primary and secondary of a transformer.
3. Test the voltage on the primary and secondary of a transformer.
4. Calculate and measure the current in the secondary of a transformer.
5. Calculate and measure the current in the primary of a transformer.

LAB PROCESS:

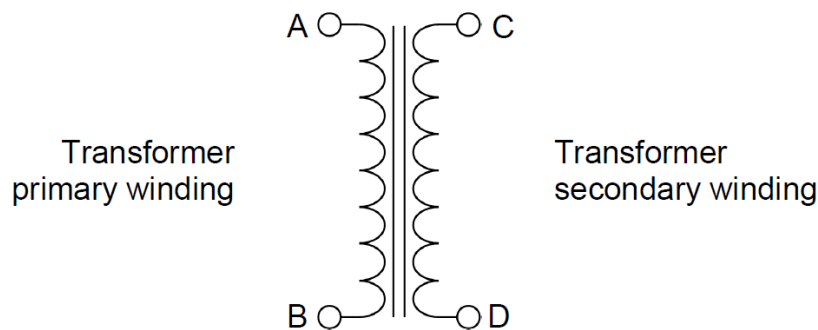
Open the AC/DC Training Unit. Setup the unit on its base, or lay flat on the work table.

Make sure all fault switches are in the 0 position.

Connect the power cord and turn off the power input switch to make sure the unit is not powered.

Part 1

Verify the location of the transformer on the AC/DC training unit.



1. Use the DMM as an Ohmmeter to measure the resistance between the following points:

a. A & B: _____

b. C & D: _____

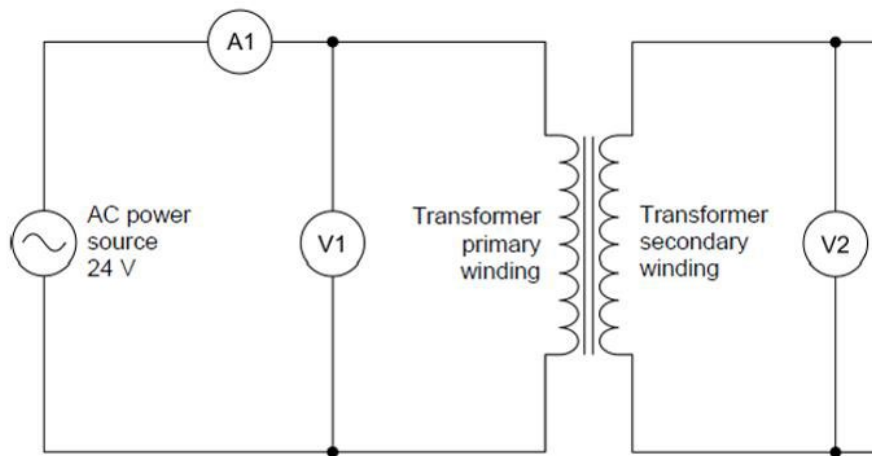
c. A & C: _____

- d. A & D: _____
- e. B & C: _____
- f. B & D: _____

The measurements should verify that there is no continuity between the primary winding and the secondary winding.

Part 2

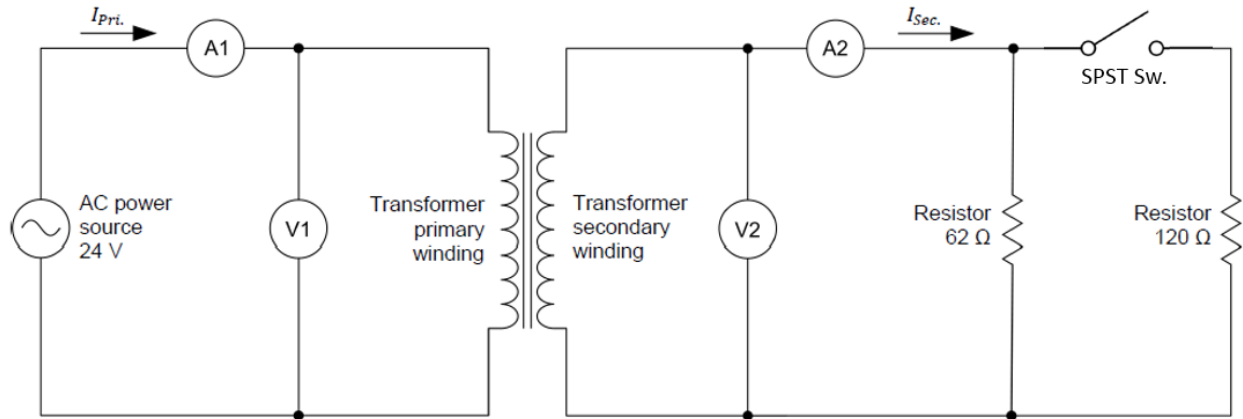
Wire the following circuit on the AC/DC training system:



1. Power on the "Power Input" switch (lower right) to power the training unit. Use the DMM in the various positions as an ammeter and voltmeter.
 - a. Is there any current flowing in the primary winding? _____
 - b. What is the primary voltage (V1)? _____
 - c. What is the secondary voltage (V2)? _____

Part 3

Wire the following circuit on the AC/DC training system:



1. Power on the "Power Input" switch (lower right) to power the training unit.
2. Open the SPST switch to remove the 120 ohm resistor from the circuit.
3. Use the DMM to measure the amperage in the primary and secondary (Make sure the rotary switch on the meter is set for the 10A setting, and the middle and left socket is used for the probes.
 - a. What is the primary current? _____
 - b. Calculate the current on the secondary _____
 - c. What is the measured secondary current? _____
4. Close the SPST switch
 - a. What is the secondary current? _____
 - b. What is the primary current? _____

Questions

1. What is the turns ratio of the transformer on the AC/DC training unit?
2. True or False: DC voltage can be transformed through a transformer.
3. When the SPST switch in Part 3 was closed, did the secondary current go up or down? Explain.

4. If the current goes up in the secondary of a transformer, what happens to the primary current of the transformer?

5. Is there a physical connection between the primary and secondary winding of the transformer?

The outcomes of this exercise (listed on page 1) specifies the skills that the Student must demonstrate to the Instructor. Once the Instructor is satisfied with the demonstration of Knowledge & Skills by the individual student, they will sign this document (for the student), then enter a 100% into the Hands-On Lab grade in Sakai.

I verify that this student has completed all of the requirements of this Hands-On Assessment:

Student Name: _____

Faculty Signature: _____ Date: _____

DOL DISCLAIMER:

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