

ETME 4130 Applied Electric Power and Machinery

Lab 1: Introduction to Electric Machines- Running a Shunt DC Motor

Pre-Lab Analysis:

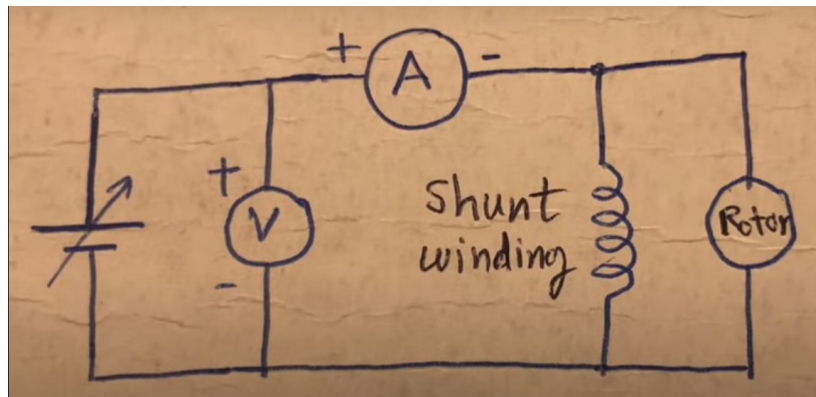
1. Answer with True or False:
 - Safety glasses must be worn continuously while in the lab, regardless of whether you are working on an experiment or not. _____
 - The protection provided by medical eye glasses is sufficient, and drops the need for wearing safety glasses. _____
 - You must inform all your group members and everyone around you before you turn on a rotating machinery. _____

2. How must a voltmeter be connected to take voltage measurements across a component?
 - a. In parallel with the component
 - b. In series with the component

3. How must an Ammeter be connected to read the current that runs through a component?
 - a. In parallel with the component
 - b. In series with the component
 - c. Across the component

Lab Work:

- Make sure that you wear your safety glasses continuously in the lab
- Make sure that the power is turned off before you start connecting the circuit
- Connect the shunt DC motor as in the circuit shown in the figure. Do NOT turn on the power until the professor approves your circuit. A video of the experiment can be found on YouTube at: <https://www.youtube.com/watch?v=09mOVw9411Q>



- Open the Labvolt Data Acquisition software (LVDAM-EMS) and turn the controls power on, which is a 24V red switch located on the Power Supply module of the LabVolt trainer. Then click on **Continuous Refresh** on the top left corner of the software window.
- Connect terminal 7 of the power supply to one of the terminals of the voltmeter E1
- Connect terminal N of the power supply to the second terminal of voltmeter E1
- Connect terminal 7 of the power supply to one terminal of the ammeter I1

- Connect the second terminal of the ammeter I1 to terminal 5 of the DC motor
- Shunt the DC motor by connecting terminal 5 to terminal 1 and connecting terminal 6 to terminal 2
- Close the circuit by connecting terminal 2 of the DC motor to the negative terminal N of the variable DC power supply
- Increase the voltage gradually until the motor start turning. Record the readings of the voltmeter and ammeter.
- Increase the voltage to 60 volts and record the current

Readings:

Voltmeter : _____

Voltmeter: 60 V

Ammeter _____

Ammeter: _____

Post-Lab Analysis:

1. In one paragraph, describe the experiment that you did in the lab.

2. Write three lessons learned from the experiment: