EE 452 – Power Electronics Design
Experiment 1 Pre-lab Assignment: Part B

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Introduction

The purpose of this assignment is to prepare you to conduct Experiment 1B. Please make sure you have read and understand the experimental procedure *before* attending your designated lab section.

This assignment will be due at the *beginning* of your lab section. Like your homework, you will submit the prelab assignments through Canvas. For each problem, please provide written analysis where appropriate, show your work, and clearly label all plots, if any.

Parts

Experiment 1 will be done on the protoboard using the following parts. In the electronic version of this document, you may click on the hyperlink embedded in the "Part number" column to bring up the data sheet for a given part. In addition to the components below, this experiment will also require resistors and capacitors of your choosing.

Description	Manufacturer	Part number
PWM Controller	Texas Instruments	UC3525AN

Prelab tasks

1. **PWM controller familiarization (5 pts).** Using datasheet for UC3525AN, give the range of switching frequency possible with this PWM controller.

2. **PWM controller familiarization. [Optional for undergrads] (5pts)** Study the UC3525AN PWM controller datasheet. This component has an oscillator whose frequency dictates the switching frequency. Assuming you are given external components $C_T = 0.01\,\mu\text{F}$ and $R_D = 0\,\Omega$, what value of R_T will give you a $50\,\text{kHz}$ oscillator frequency?