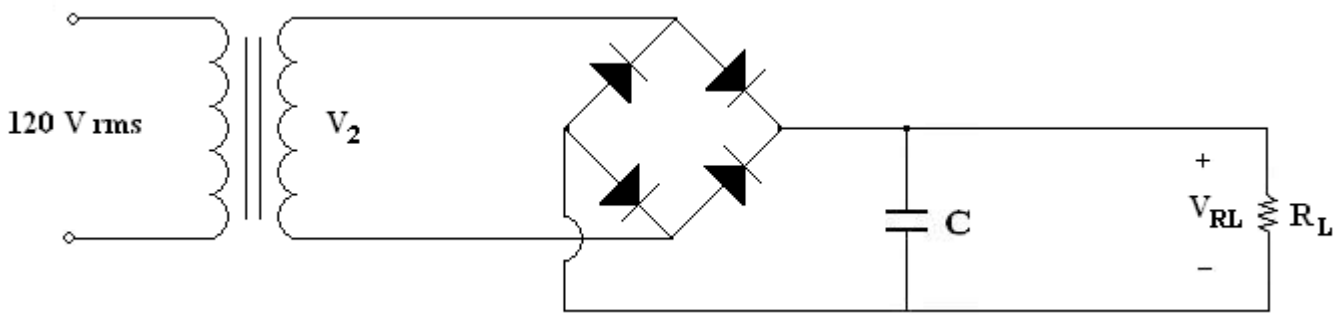
JEE2330 – Spring 2025
Lab #8 Problem

A DC power supply consisting of a transformer and a full-wave bridge rectifier with a capacitor filter is shown. The output voltage of the transformer is V_2 = 24 V rms at a frequency of 60 Hz, and the output resistance R_L = 4.3 kΩ. Assume that the voltage drop across each forward biased diode is 0.7 volts.



1. What is the peak positive voltage seen across the capacitor C and loaded resistor R_L?

V_C = _____

2. What is the value of the capacitor needed for the peak-to-peak ripple voltage across the load resistor to be 0.2 volts?

C = _____

3. What is the DC voltage across the load resistor R_L considering both the drop across the diodes and the effect of the ripple voltage?

V_{RL} = _____

4. What is the DC power delivered to the load resistor?

P_{RL} = _____

5. What is the ripple factor for this power supply?

RF = _____