ELEC 302 Lab 1

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1 Task 1

Part 1.

Part 2.

For the capacitor, we can use the formula given in class to calculate the value:

$$C = \frac{V_p - V_d}{f R_L V_r} = \frac{16.8 - 0.7}{60 \cdot 1000 \cdot 1} = 268.3\mu\text{F}.$$

Since we don't have any capacitor values close to that, we instead used one 220μF and two 33μF capacitors in parallel which has an equivalent capacitance of 286μF.

2 Task 2

Part 1.

For the capacitor using the equation:

$$C = \frac{V_p - 2V_d}{2 f R_L V_r} = \frac{33.2 - 1.4}{2 \cdot 60 \cdot 1000 \cdot 1} = 265\mu\text{F}.$$

Again we used the same capacitor configuration as before of 286μF since we didn't have a single capacitor of the correct value.

Part 2.

Again, the capacitor comes from the equation:

$$C = \frac{V_p - V_d}{2 f R_L V_r} = \frac{16.8 - 0.7}{2 \cdot 60 \cdot 1000 \cdot 1} = 134\mu\text{F}.$$

Three 33μF capacitors were used in parallel to simulate this.