

1. Exercise 3.31, p.194, Assume diodes have 0.7V drop instead of ideal.  
DRAW the transfer characteristic.
2. Exercise 3.32, p.196
- 3.- 5 Problems: 3.106, 107, 110 with 0.7V drop diode instead of ideal.
6. Consider a full-wave rectifier circuit made with a transformer rated at 6.3 Vrms CT @ 1A. You would like to use this to supply a 7805 three terminal voltage regulator. This regulator requires at least 7.3 V at the input to provide a regulated 5 V output. Can it supply 250mA?

How much ripple can you have?

What value of filter capacitor do you need?

Measurements, use standard assumptions for those values not measured.

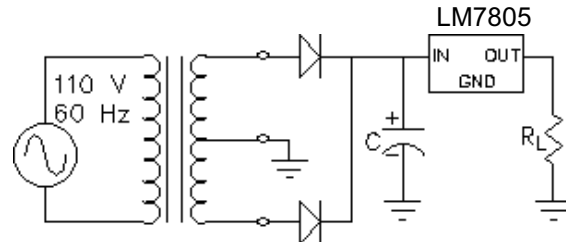
$$V_{pac} \quad V_{pac} := 9.1 \cdot V$$

$$V_{nL_{rms}} \quad V_{nL_{rms}} := 7.2 \cdot V$$

$$V_{L_{rms}} \quad V_{L_{rms}} := 6.6 \cdot V \quad R_L := 10 \cdot \Omega$$

diode, 1N4002:

$$r_d := 0.1 \cdot \Omega \quad V_{fd} := 0.9 \cdot V$$

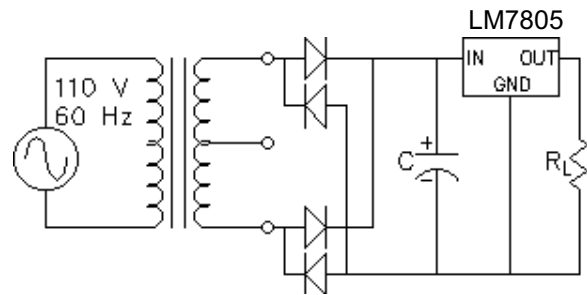


7. Using the same transformer and regulator, change to full bridge rectification. Can this supply the full 1A that the regulator can handle?

How much ripple can you have?

What value of filter capacitor do you need?

Remember to double the  $V_{pac}$  and  $R_w$  because you're now using the full winding. Also, remember to adjust your calculations of  $R_s$  and  $V_{pr}$  for the full bridge (two diode drops).



**Answers**

6. Yes, it can supply 250mA, but just barely.  $V_r = 0.23V$ . Need a 5850  $\mu F$  cap.
7. Yes, it can supply 1A, easily.  $V_r = 8V$ . Need a 520  $\mu F$  cap.