

Union College
ECE248
Spring 2018
Homework #2

Due Wednesday April 18, 2018

Read:

Chapter 4 sections 4-2 to 4-4

Chapter 5 sections 5-1 to 5-6

Unless otherwise noted, all problems from Malvino & Bates (8th ed)

Note that odd numbered textbook problems have answers in the back of the book.

A. Full-wave rectifiers

4-9

4-11

4-xx Derive the expression (e.g. compute the time average integral) $V_{DC} = 2V_P/\pi$ for the DC voltage of a full-wave rectifier.

B. Bridge Rectifiers

4-14 You should get $V_{MIN} = 10.9V$ and $V_{MAX} = 13.2V$.

4-45 Be careful with this problem, because the transformer secondary has a grounded center tap in order to produce the (+) and (-) output.

C. Zener diodes (assume $I_Z = 0$ as the condition for drop out)

5-5

5-6 You should get $I_{Z,MAX} = 10.7$ mA

5-7

5-11 Refer to the circuit of Fig. 5-40

5-12 You should get $V_S = 19.7V$

5-13

5-14 You should get $R_{S,MAX} = 120$ ohm.

D. Diode datasheets

4-yy Suppose that the lab you are doing specifies that you use a 1N4002 diode but you only have 1N4003 diodes. Use the datasheet on the WEB site to determine if the 1N4003 diodes will work. Explain your answer.

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