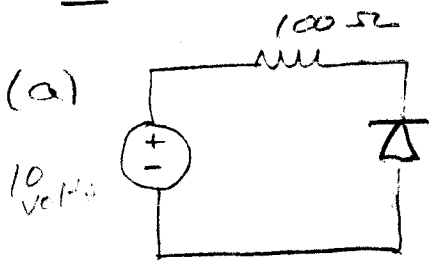
EE 315 — MAKE-UP EXAM — 1 NOV 2007

NAME: MR. O'NEAL

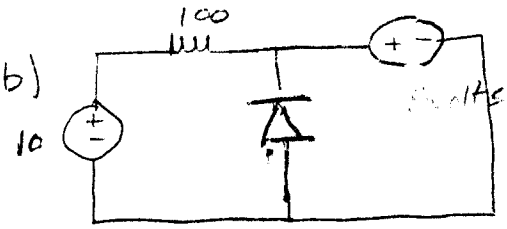
1. (20 pts) The diodes below are ideal diodes. ARE They forward or reversed biased? Check box. NO PART CREDIT.

(a)



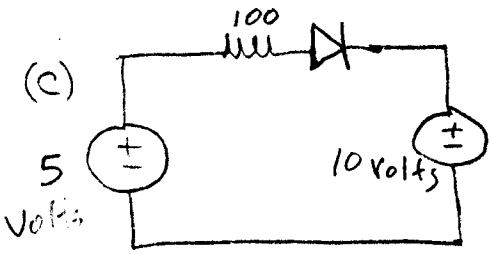
☐ Forward
☐ Reverse

(b)



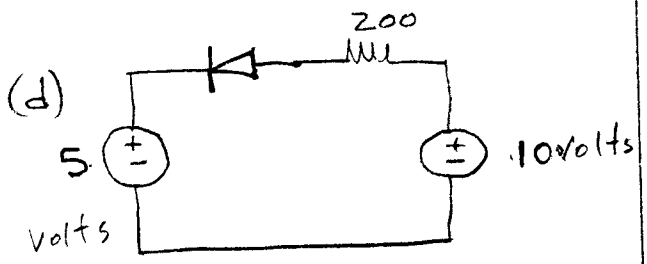
☐ Forward
☐ REVERSE

(c)



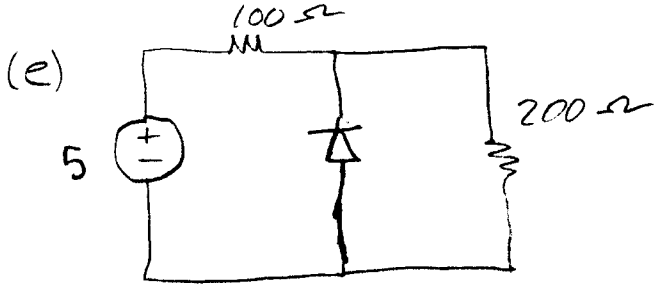
☐ Forward
☐ REVERSE

(d)



☐ Forward
☐ REVERSE

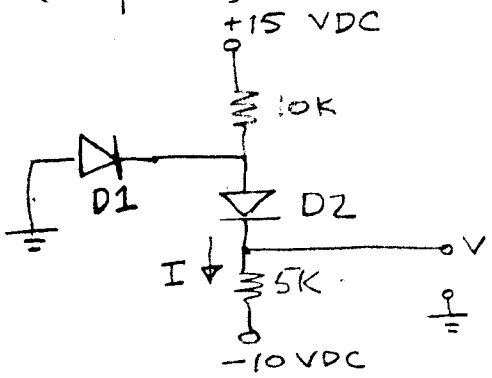
(e)



☐ Forward
☐ REVERSE

TOPS 35500

2. (20 points)

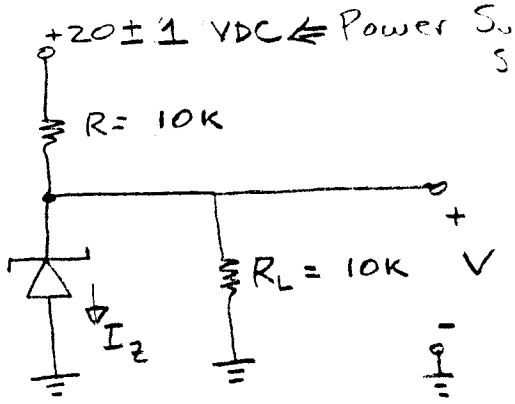


Diodes D1 and D2 are ideal.

Find I AND V

3. (20 points)

The ZENER exhibits $V_Z = 9.4$ volts at a test current of 5 mA. Also $r_Z = 12$ ohms



a.) Compute V_{Z0} AND I_Z, the in-circuit ZENER Current.

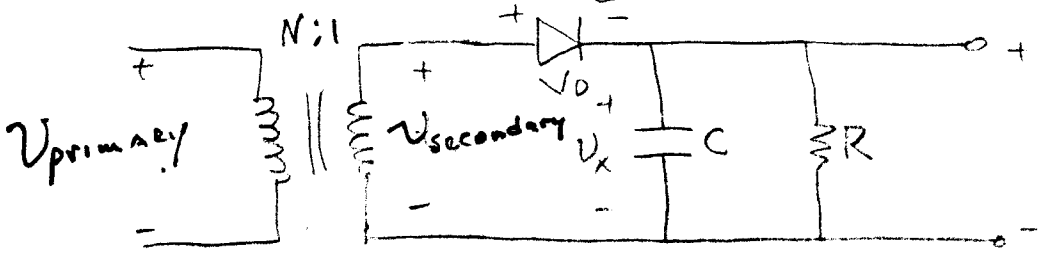
b) Compute V with No Load (That is, No R_L) at Nominal voltage of 20 VDC

c.) The Power Supply voltage CAN VARY by ± 1 volt. What is the line regulation?

d) Now with R_L connected, find the Load regulation.

4. (20 points)

diode is Ideal.



NOTE
Step down Transformer with $N = 20$ or $\frac{n_p}{n_s} = 20$

$v_{primary}$ = 100 volts peak sinusoid at 60 hz.

$R = 10\ k\Omega$

$C = 100\ \mu F$

a) What is the value of the ripple voltage?

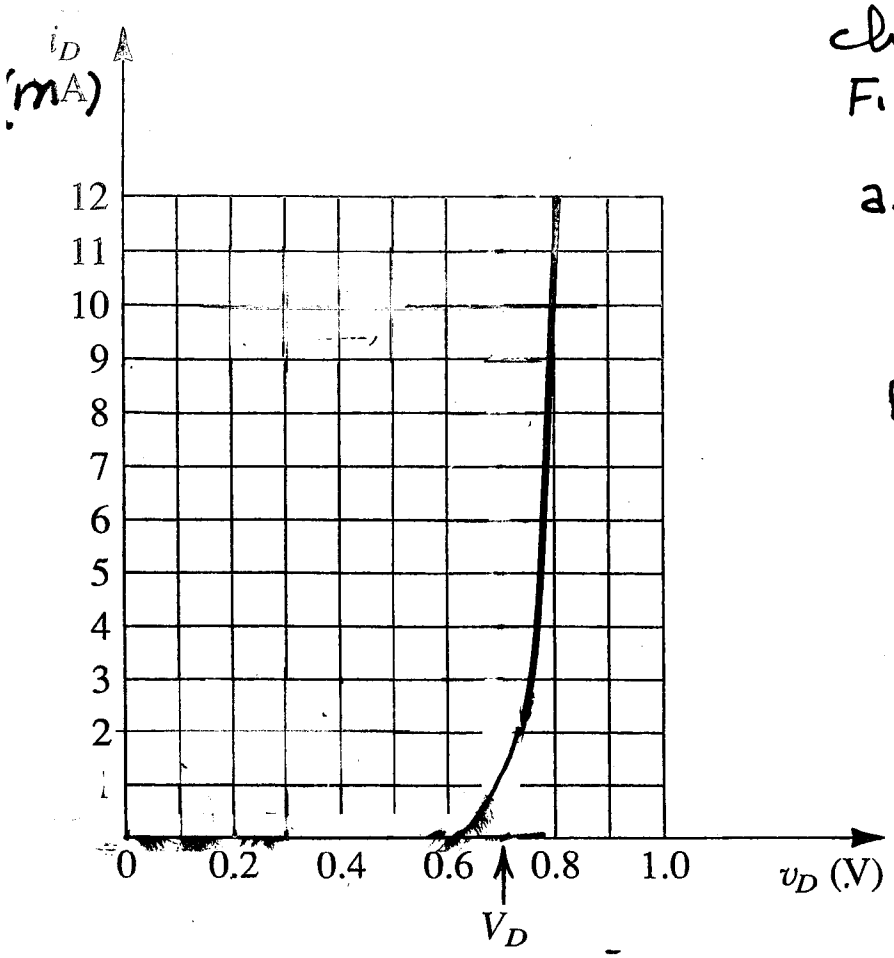
b) What is the PIV on the diode?

c) What is the conduction angle for the diode?

d) What is the average diode current, $I_{D\,AVG}$?

e) What is the maximum diode current? (O.K. to estimate this)

5. (20 points)

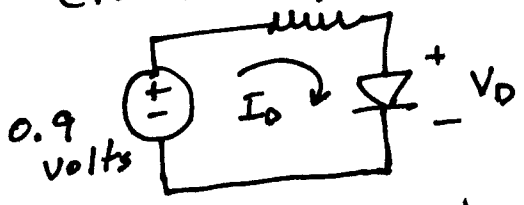


Given the diode operating characteristic in the Figure.

a.) Develope a piecewise linear model. (Battery plus resistor model)

b) Develop the constant VOLTAGE Drop Model

c) The diode is placed in the following Circuit:



PLOT the Load Line on the graph and determine V_D, I_D.