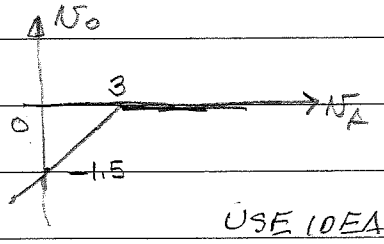
Text Problems: 3.15, 3.53, 3.58, 3.60

PROBLEM A

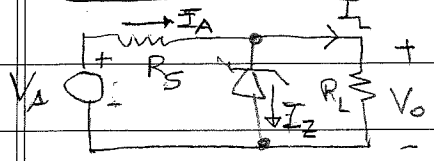
The voltage transfer characteristic $V_o$ vs. $V_s$ is




1. Sketch $V_o$ if $V_s(t) = 2 + 3\sin\omega t$
2. Design a simple diode circuit that results in the voltage transfer characteristic shown.

USE IDEAL DIODES

PROBLEM B

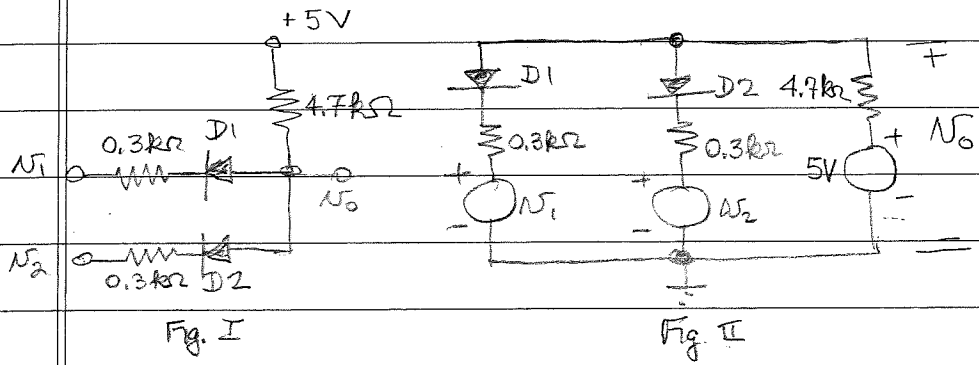



In the circuit shown a 5V-Zener diode with $R_z = 0$ provides regulation for $50mA \le I_A \le 1A$

$R_S = 4.7\Omega$ and $V_S$ varies between 7.5V and 10V.

Find the range of $I_L$ for which regulation is achieved.

PROBLEM C




Figs. I and II are identical

The diodes in the circuit shown turn on with $V_D = 0.6V$

Find $V_o$ for a) $V_1 = V_2 = 5V$; b) $V_1 = 5V$, $V_2 = 0$; c) $V_1 = 0$, $V_2 = 5V$ and d) $V_1 = V_2 = 0$