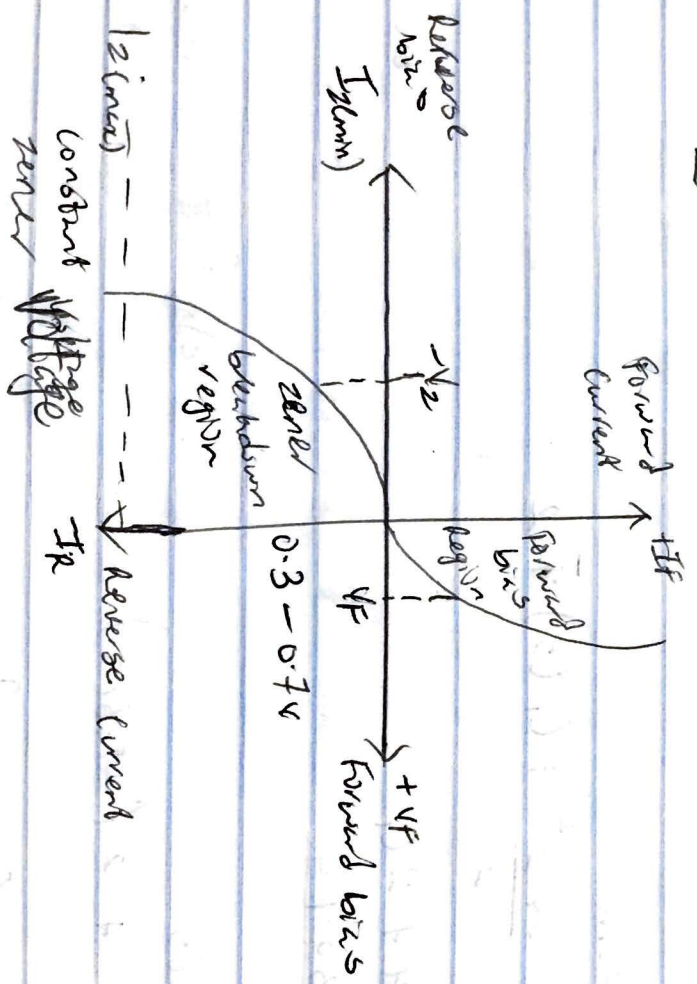


1) A Zener diode is a diode similar to the standard PN junction diode but they are specially designed to have a low and specified reverse breakdown voltage

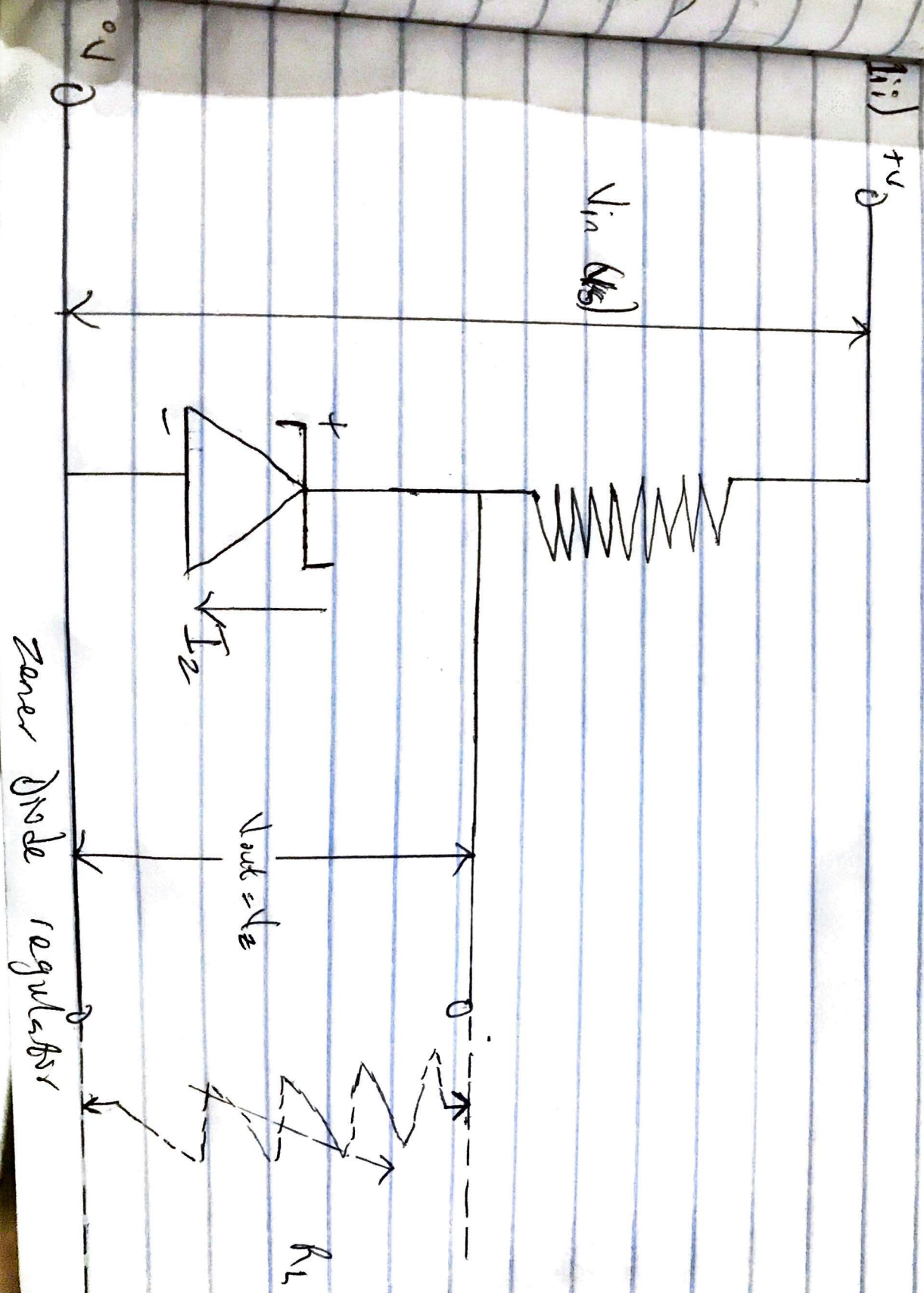


I-V characteristics curve

ii)  $I_z = I_s - I_L$ ,  $I_z = \frac{V_z}{R_z} = \frac{10}{600} = 0.0167 \text{ A}$

$\therefore I_z = (600 - 20) \text{ mA} = 580 \text{ mA}$

$= 480 \text{ mA}$



2)  $V_0 = 20V$

$V_Z = 2$

max current  $500mA = I_s$

$P_Z = 5W$

i)  $I_c = \frac{P_Z}{V_Z} = \frac{5}{2}$

$V_Z = \frac{P_Z}{I_c} = \frac{500 \times 10^{-3}}{2.5}$

$= 10V$

$\therefore V_Z = 10V$

$R_s = \frac{V_0 - V_Z}{I_c} = \frac{20 - 10}{500 \times 10^{-3}} = \frac{10}{500 \times 10^{-3}}$

$= 20$

$R_s = 20\Omega$

ii)  $I_Z = I_s - I_L$ ,  $I_L = \frac{V_Z}{R_L} = \frac{10}{500}$

$= 0.02A$

$\therefore I_Z = (500 - 20)mA$

$= 480mA$