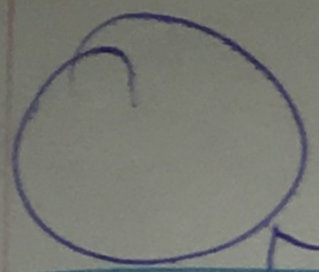


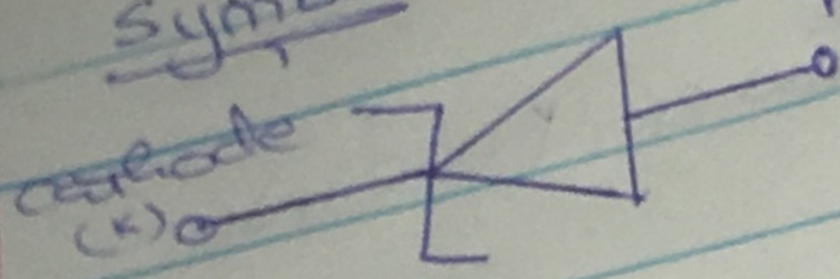
NYESIGURUKA C. NANCY
18/ENG07/012
PETROLEUM ENGINEERING.
ENG 222

1) Zener diode Regulator :-

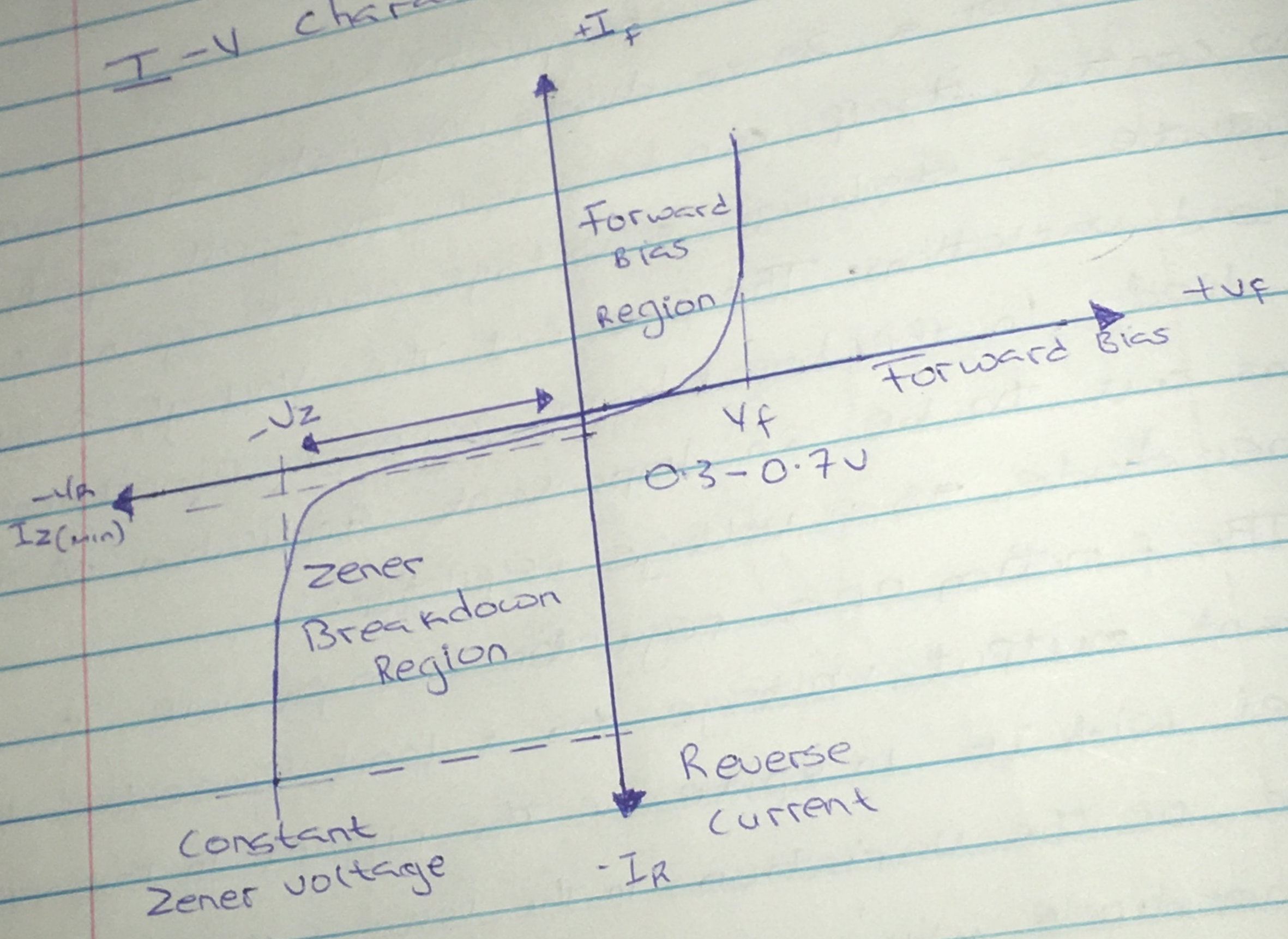
For a Zener diode Regulator, The ability to control itself can be used to great effect to regulate or stabilize a voltage source against supply or load variations. The fact that the voltage across the diode In the breakdown region is almost constant turns out to be an Important application of the Zener diode as a voltage regulator.

The function of a regulator is to provide a constant output voltage to a load connected in parallel with it In spite of The ripples In the supply voltage or The variation In the load current and the Zener diode will continue to regulate the voltage untill the diodes current falls below the minimum IZ (min) value in the reverse breakdown region.

Symbol

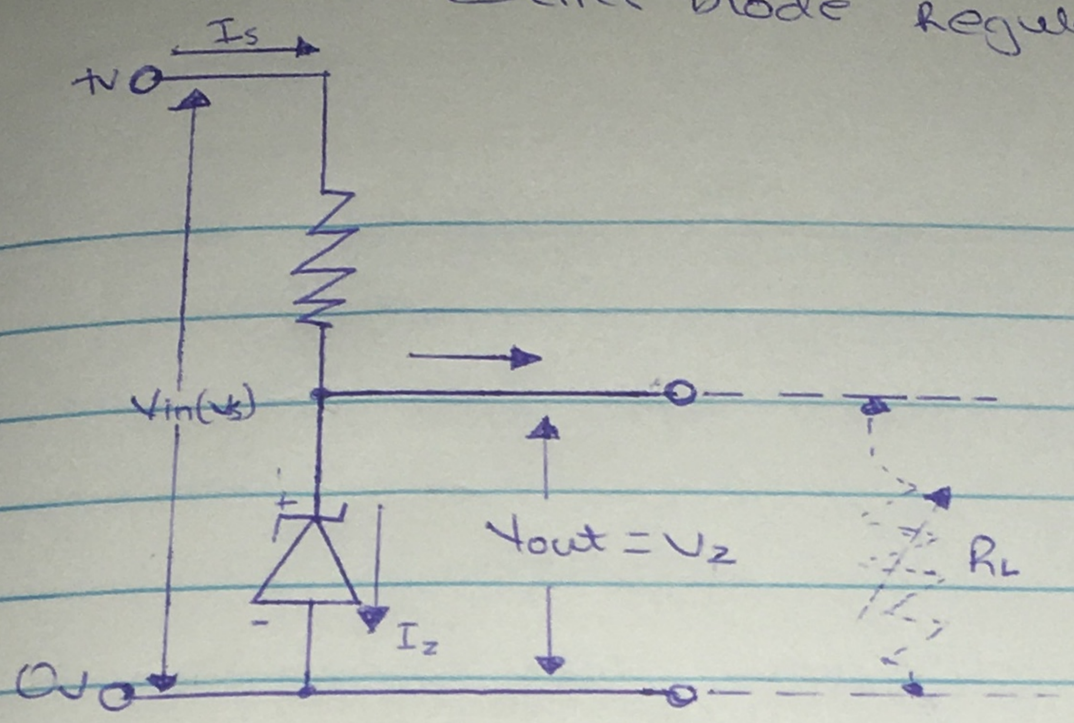


I-V characteristics curve



CIRCUIT DIAGRAM

Zener Diode Regulator.



D.C. Input voltage from rectifier or smoothing circuit.

(2) $V_S = 20V$

$V_Z = 2$

max current = 500MA = 15

$P_Z = 5w$

i) $I_S = \frac{P_Z}{V_Z} = \frac{5}{500 \times 10^{-3}}$

$\therefore V_Z = 10V$

$R_S = \frac{V_S - V_Z}{I_Z} = \frac{20 - 10}{500 \times 10^{-3}}$

$= 20\Omega$

$R_S = 20\Omega$

ii) $I_Z = I_S - I_{LPL} = \frac{V_t}{R_L} = \frac{10}{500}$

$= 0.02\Omega \quad = 20MA$

$\therefore I_Z = (500 - 20)\,MA = 480\,mA$