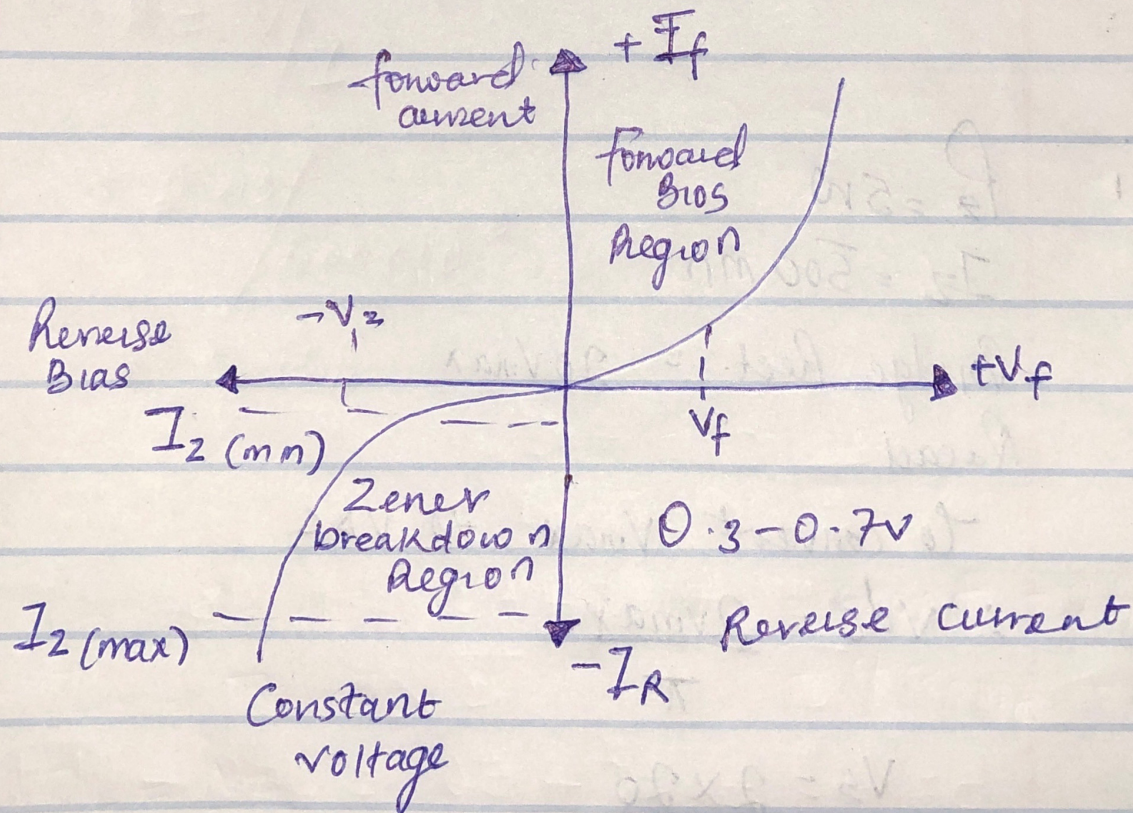
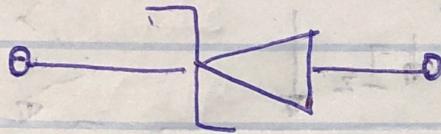


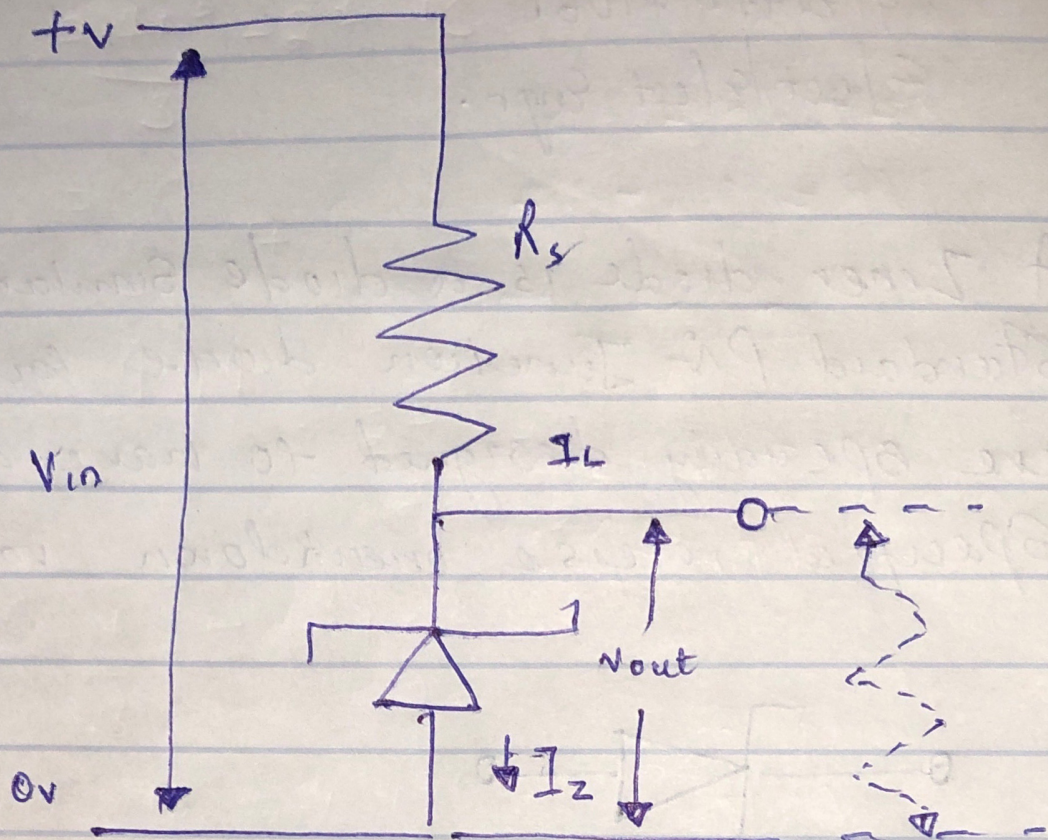
Okoroafor Nonso  
18/ENR04/061  
Elect/Elect Engr.

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



I-V Characteristics Curve

ii



2i  $P_Z = 5W$

$I_Z = 500 \text{ mA}$

Bridge Rect. =  $20V_{max}$

Racau

To convert  $V_{max}$  to VDC

$$\therefore V_{dc} = \frac{2V_{max}}{\pi}$$

$$V_s = \frac{2 \times 20}{\pi}$$

$$= 12.73 \text{ VDC.}$$

Recall that

$$V_2 + V_R = V_S$$

$$V_R = V_S - V_2$$

$$\begin{aligned} & \frac{2 \times 20}{\pi} - 10 \\ & = 12.73 - 10 \\ & = 2.73 \text{ V} \end{aligned}$$

Therefore

$$V = IR$$

$$R = V/I$$

$$= 2.73 / 500 \times 10^{-3}$$

$$R = 5.46 \Omega$$

ii

$$I_S = I_2 + I_L$$

$$I_2 = I_S - I_L$$

$$I_L = \frac{V_2}{R}$$

$$= \frac{10 \text{ V}}{500 \Omega} = 0.02 \text{ A}$$

$$\begin{aligned} I_2 &= 500 \text{ mA} - 20 \text{ mA} \\ &= 480 \text{ mA} = 0.48 \text{ A} \end{aligned}$$

$$= 20 \text{ mA}$$