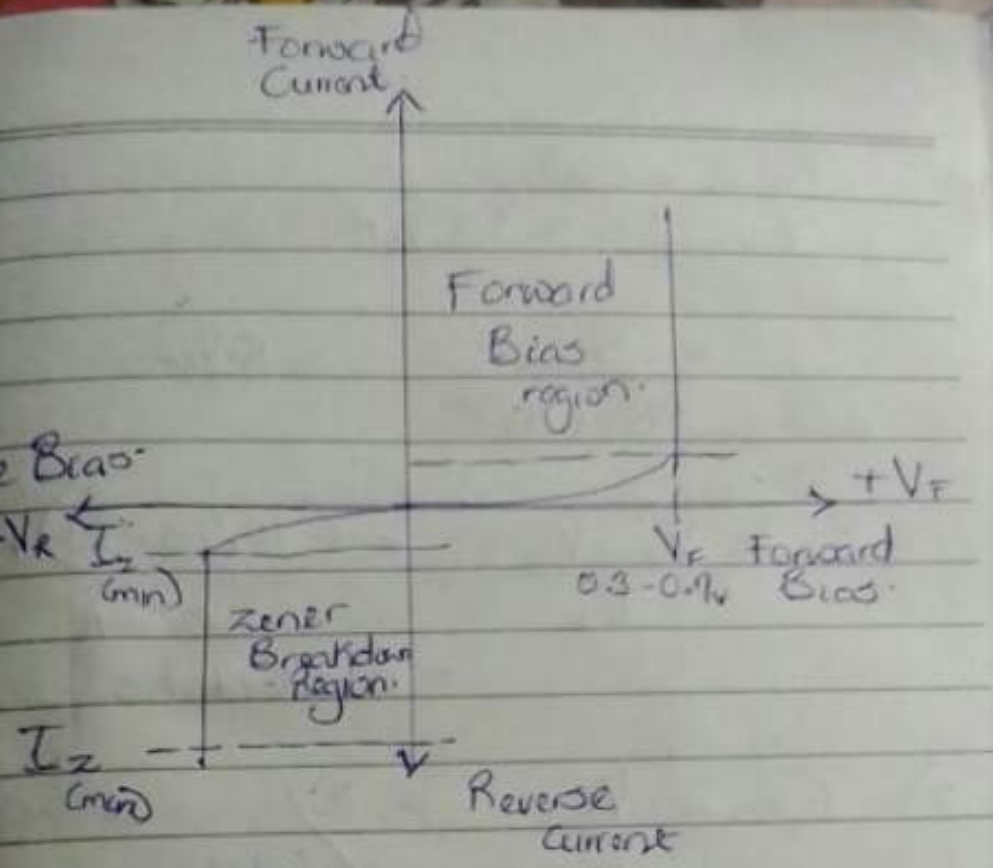


2) Minimum Value of Series Resistor (R_s)

$$R_s = \frac{V_s - V_z}{I_z}$$

$I_z = 500mA$

$V_s = 20V_{max}$

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

$= 2 \times 6.36 V_{at} = 12.73 V_{dc}$.

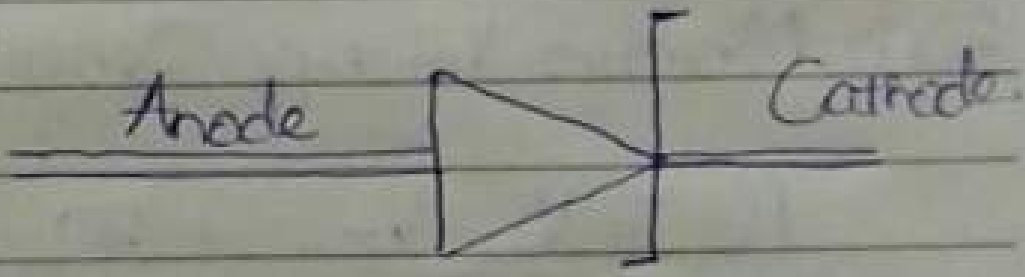
V_z = min. Voltage.

→ max current Power
min. current.

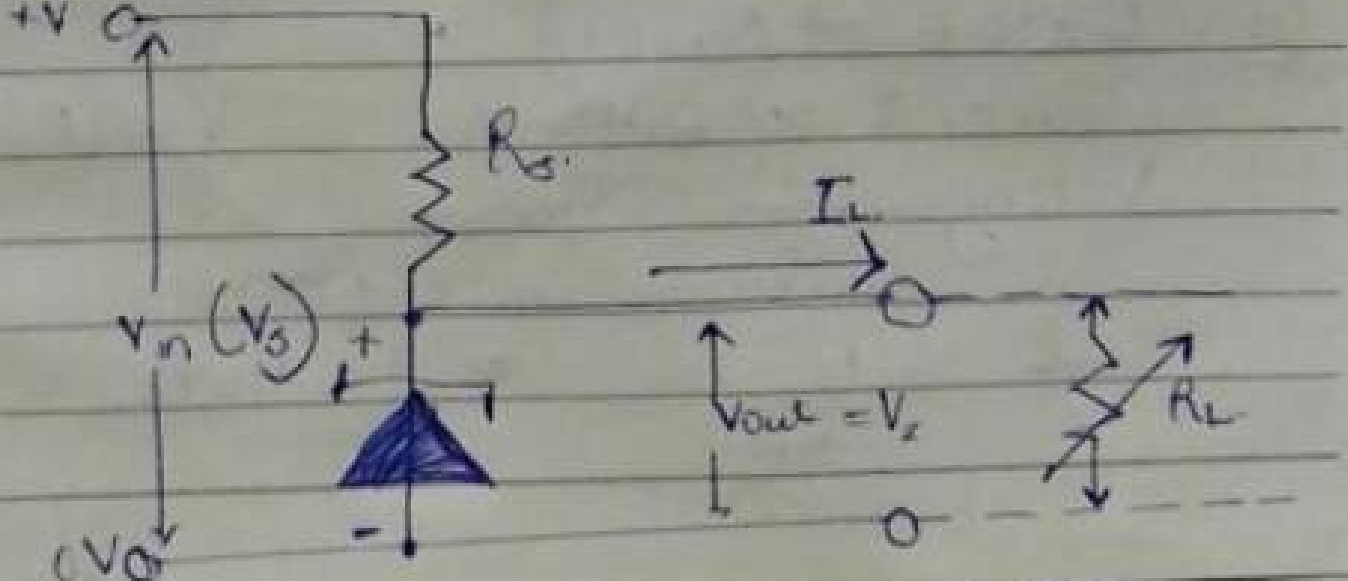
1) Zener diode as Voltage Regulators

The Zener diode specially made to have a reverse voltage breakdown at a specific voltage. The purpose of a voltage regulator is to maintain a constant voltage across a load regulation regardless of variations in the load current.

i) Symbol:



ii) Characteristic I-V curve:



$P_{zom} = 5W$

$I_{zmax} = 500mA$

$= \frac{5}{500 \times 10^{-3}} = 10V_{rms}$

$R_s = \frac{V_s - V_z}{I_z} = \frac{(12.73 - 10)V}{500mA}$

$= 5.46 ohms$

(ii) $I_R = \frac{V_R}{R_L} = 10/500 = 0.02A$

$= 20mA$