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Basic Elect
Civil Engineering

& Labels

+ Rs - Resistor
+ Vs - Voltage source
+ Vout - Stabilised output voltage
+ RL - Load Resistance
+ IZ - Load current across Zener Diode

2 Max = 5w $I_Z = 500mA = 0.5A$, 20V max = V_S

i Maximum Current = $\frac{\text{Max Power}}{\text{Voltage}} = \frac{5w}{V} = 0.5A$

$V_Z = 10$ volts

Minimum resistance = $\frac{V_S - V_Z}{I_Z}$

$V_{dc} = 0.637 V_{max}$
$= 0.637 \times 20$
$= 12.74$ Vdc

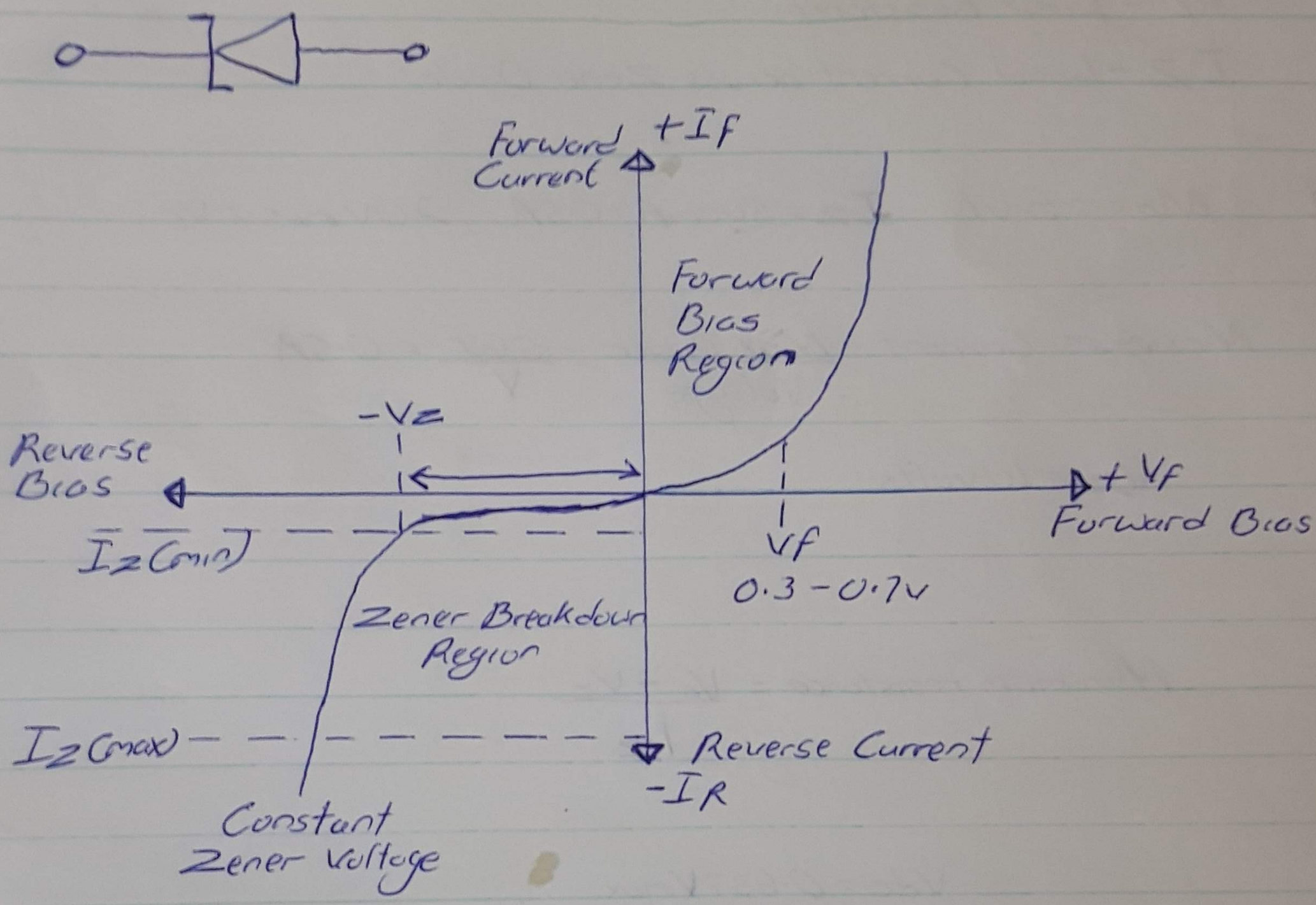
Minimum resistance = $\frac{12.74 - 10}{0.5} = 5.48\Omega$

ii Load current $I_L = \frac{V_Z}{R_L} = \frac{10}{500} = 0.02A$ or 20mA

$I_Z = I_S - I_L$
$= 500 - 20 = 480mA$

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



I - V characteristics Curve

ii