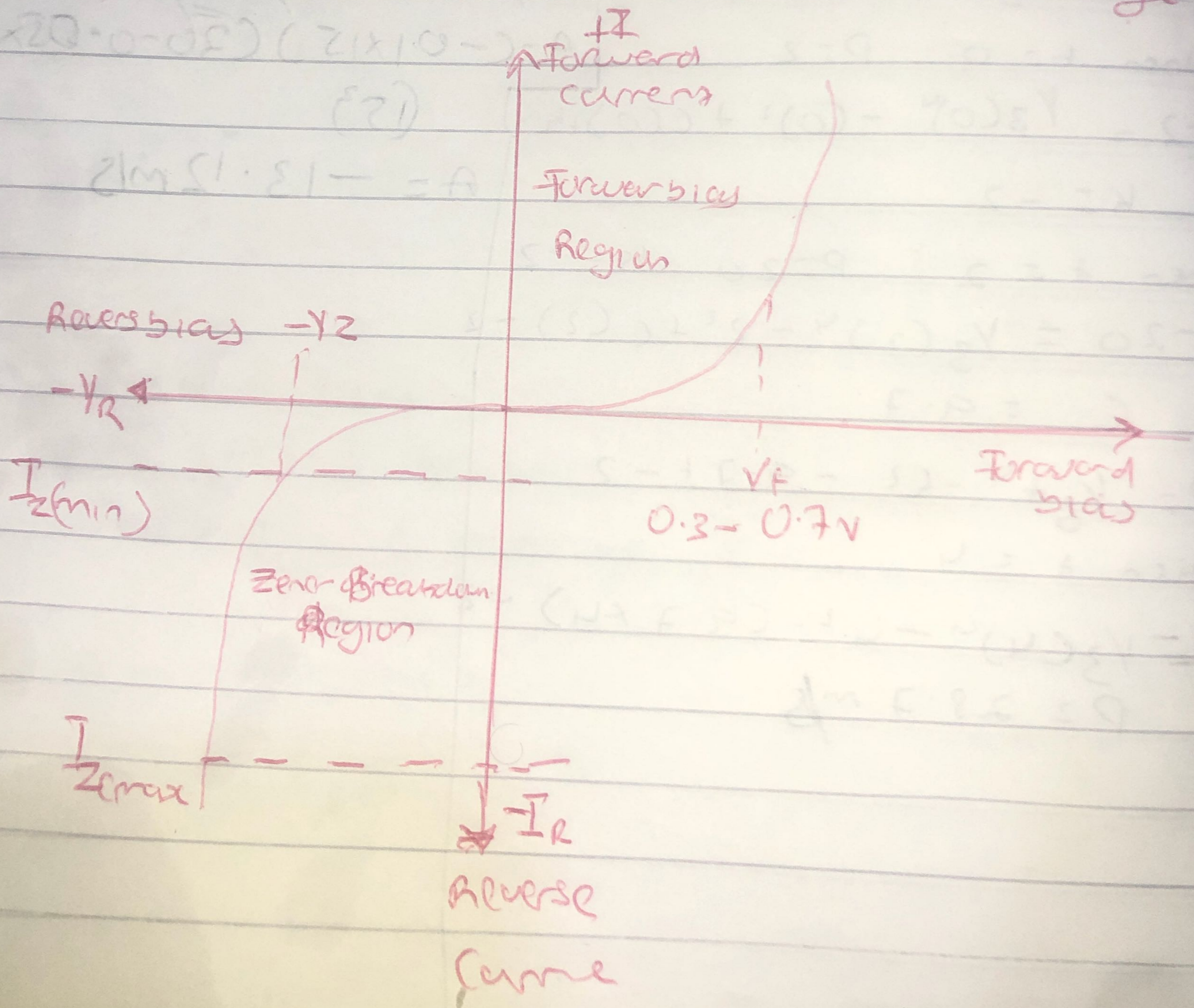


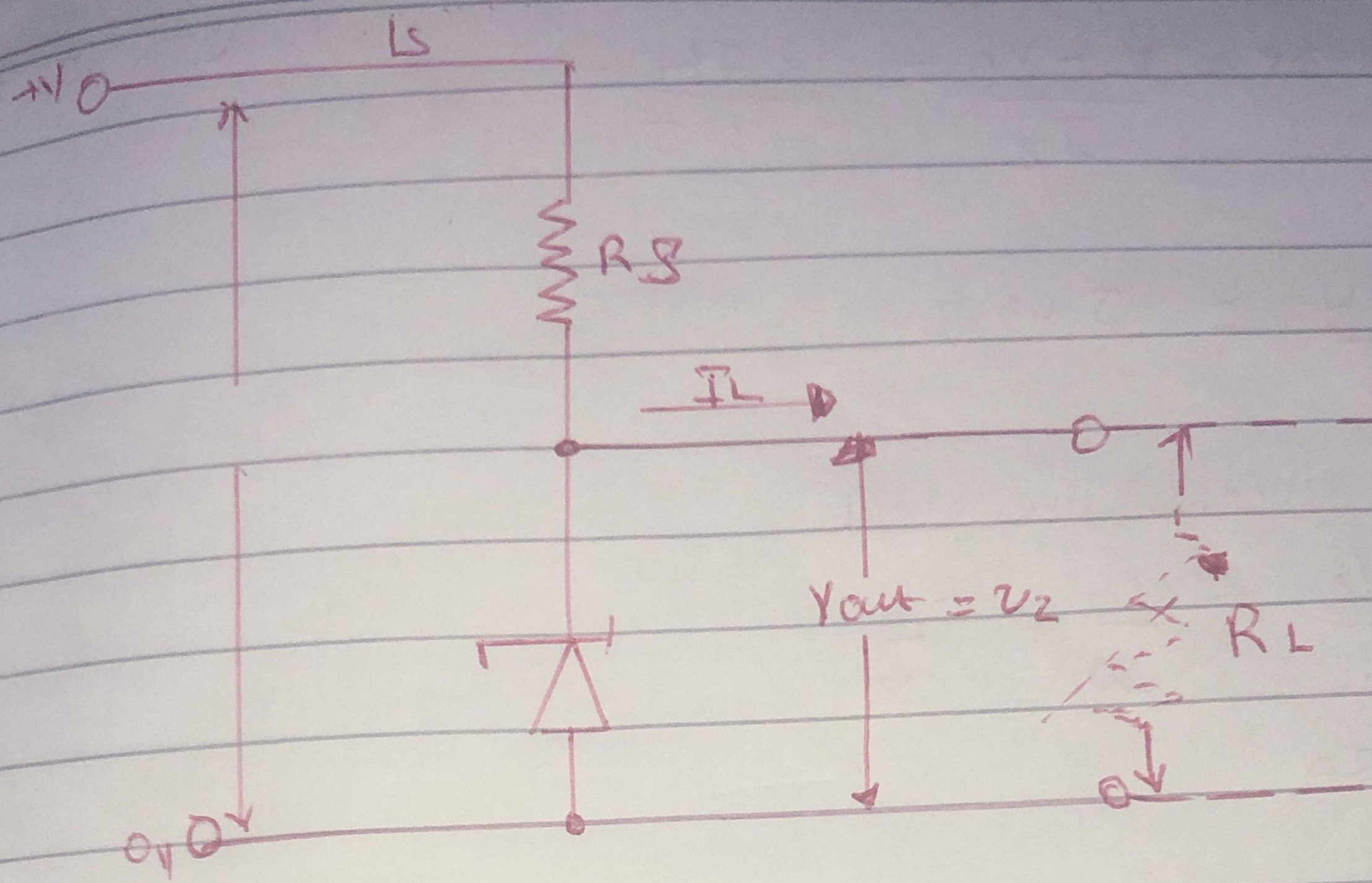
Ighere Oghenefoiso Victor

18/Eng 031/031

Civil Engineering

1) The Zener diode is like a general-purpose signal diode consisting of a silicon PN junction. It is a type diode that allows flow of current from its anode to its cathode. A Zener diode conducts when the voltage reaches the diode's breakdown voltage.





② $P_2 = 5W$

$I_2 = 500mA = 0.5A$

max current = $\frac{\text{max. Power}}{V}$

$0.5A = \frac{5W}{V} \Rightarrow 0.5A \cdot V = 5W$
 $V = \frac{5W}{0.5A}$

$V = 10V$

Then $V_{dc} = 0.637 V_{max}$

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

$$\text{min resistance} = \frac{V_S - V_A}{I_Z} = \frac{12.74 - 10}{0.5}$$

$$\Rightarrow \frac{2.74}{0.5} = 5.48 \Omega$$

ii) current across the diode

$$I_L = \frac{V_Z}{R_L} = \frac{10}{500} = 0.02 \text{ A}$$

$$\Rightarrow 0.02 \text{ A}$$

\therefore current across the diode

$$\Rightarrow 0.02 \text{ A}$$