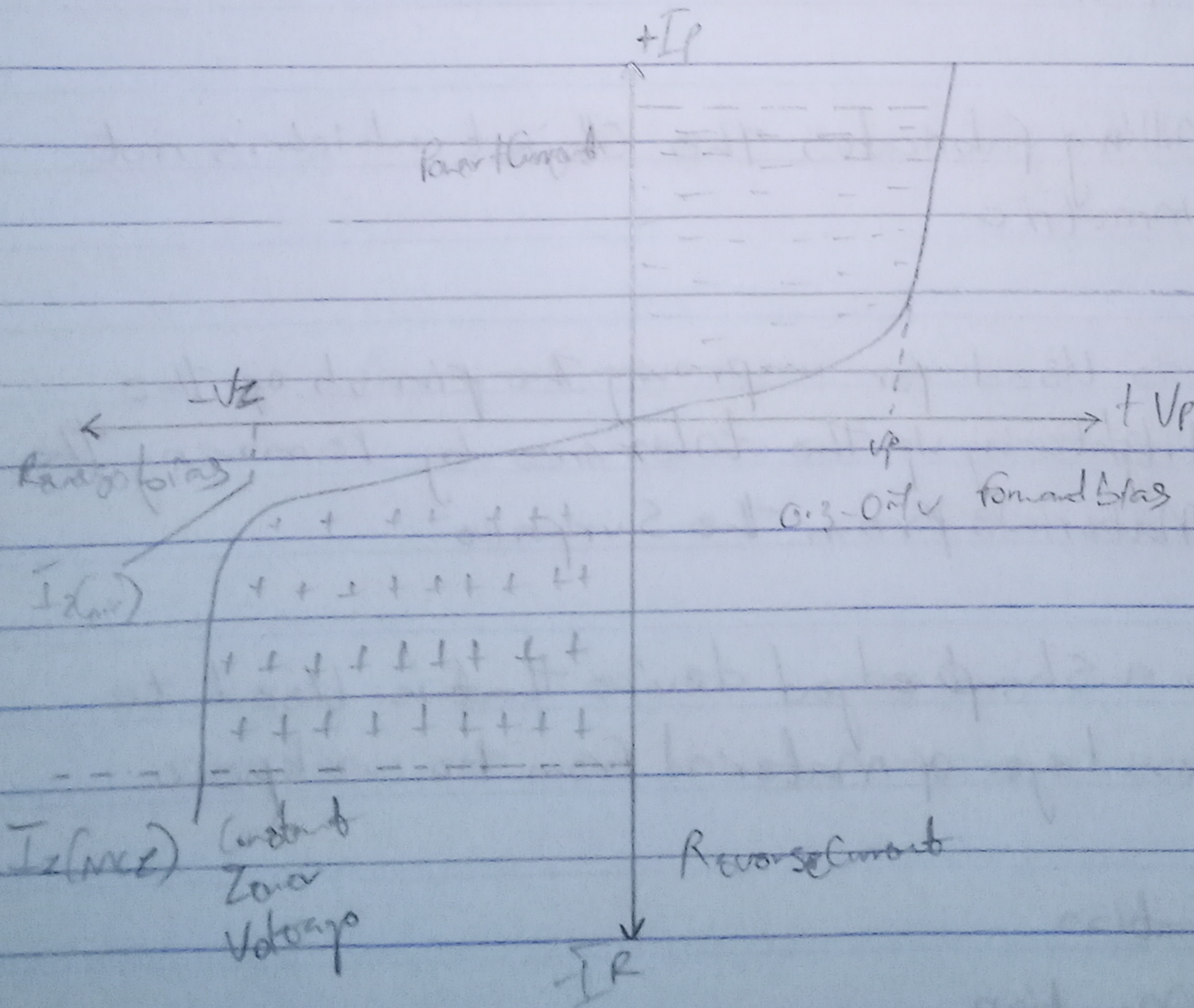
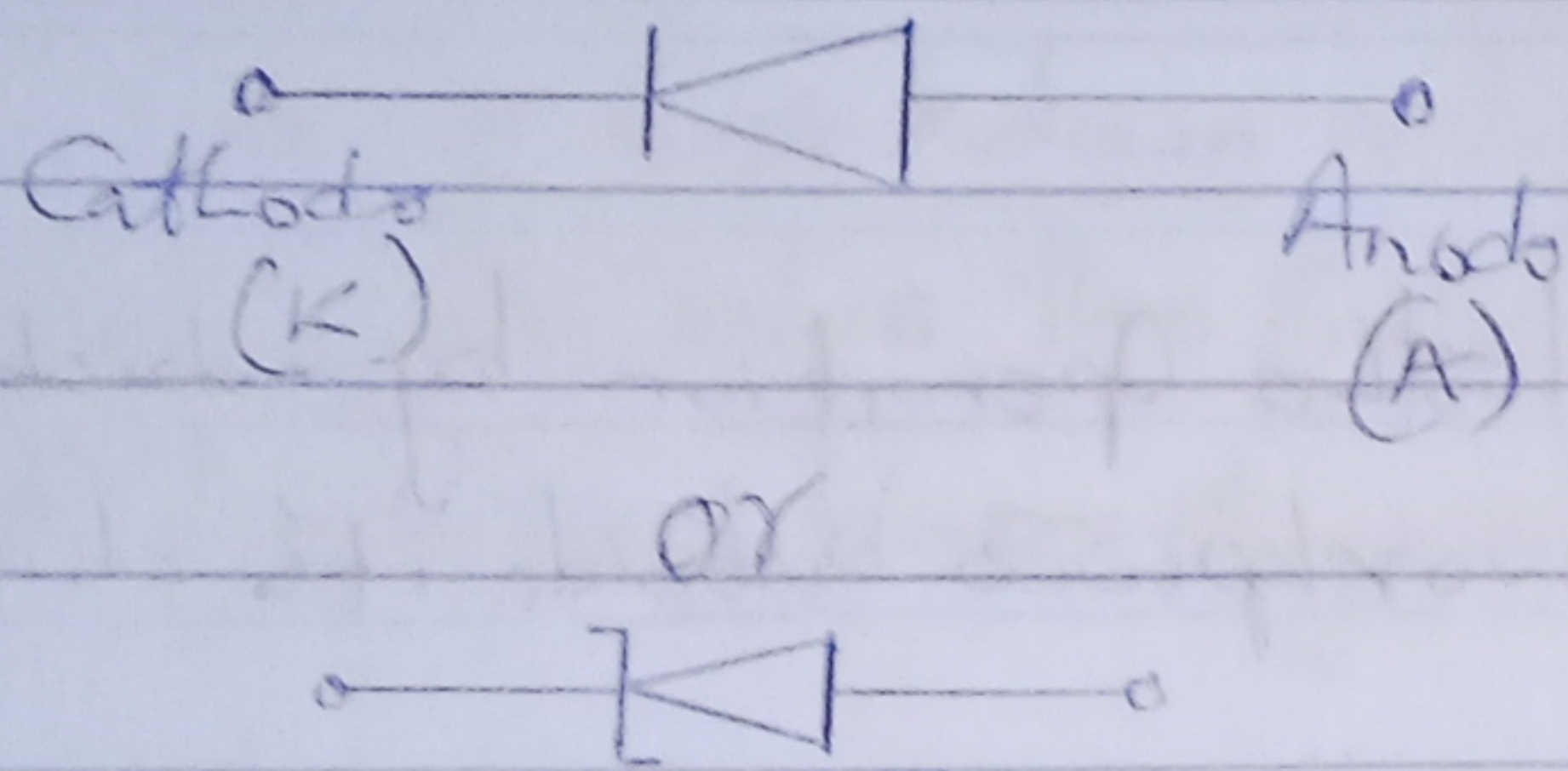
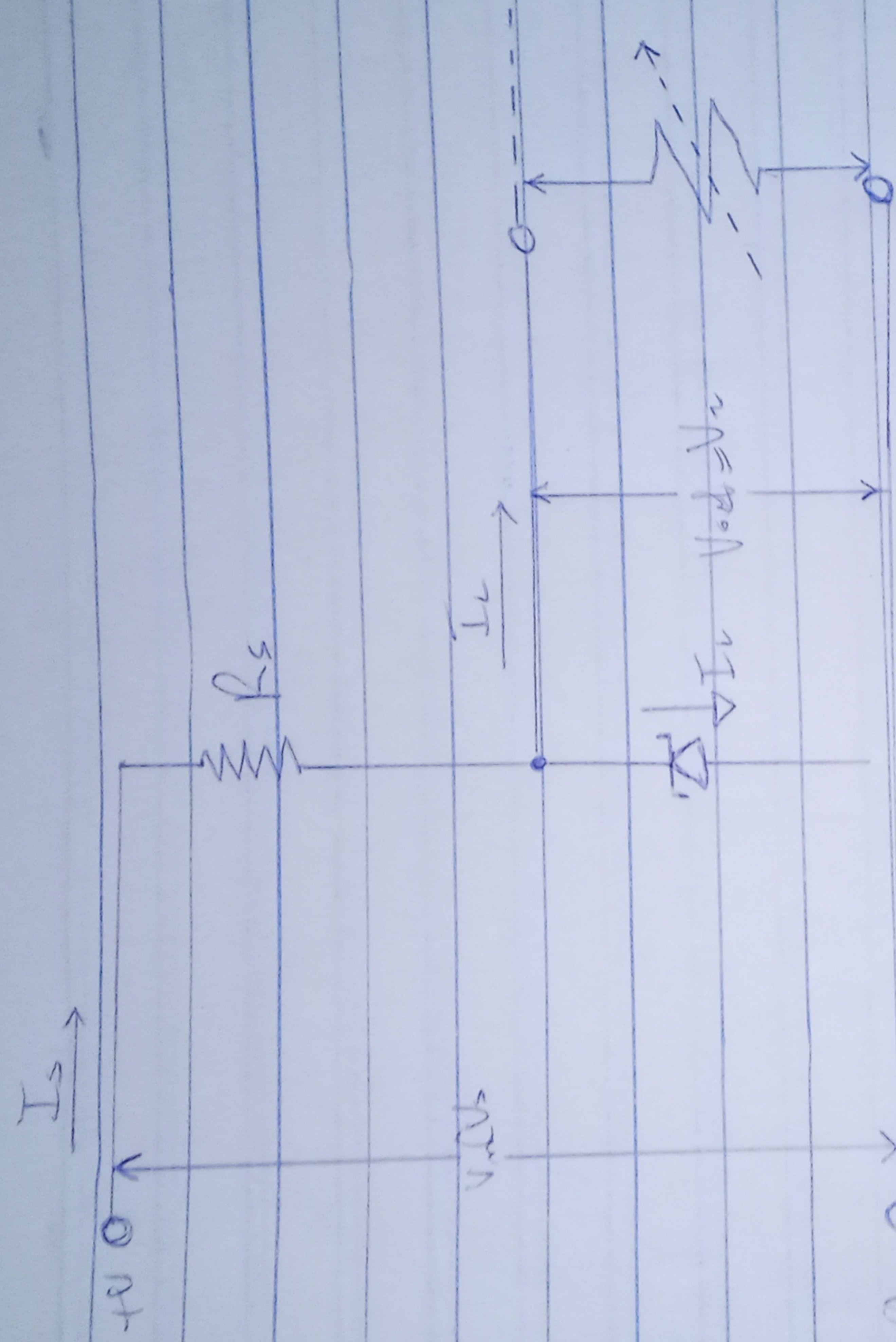


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1) A Zener diode resistor consist of a current limiting resistor. It is connected in series with the input voltage  $V_s$ . It is a Silicon Semiconductor device that permits current to flow in either a forward or reverse direction. The voltage drop across the diode remains constant over a wide range of voltages, a feature that makes Zener diodes suitable for use in voltage regulation.





Zener diode Regulator Circuit

2a) First Voltage of Zener diode

$$V_z = \text{Watt} = 5 = 10V$$

Current 50mA

This Minimum Value

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

50mA

$$R_s = 20\Omega$$

2b) I at 500Ω

$$I_z = \frac{V_z}{R_L} = \frac{10}{300\Omega}$$

$$= 0.02A$$

$$I_L = 0.02A$$