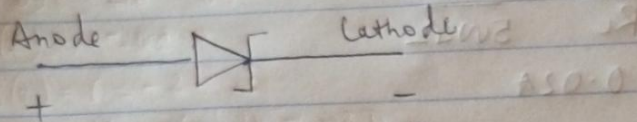


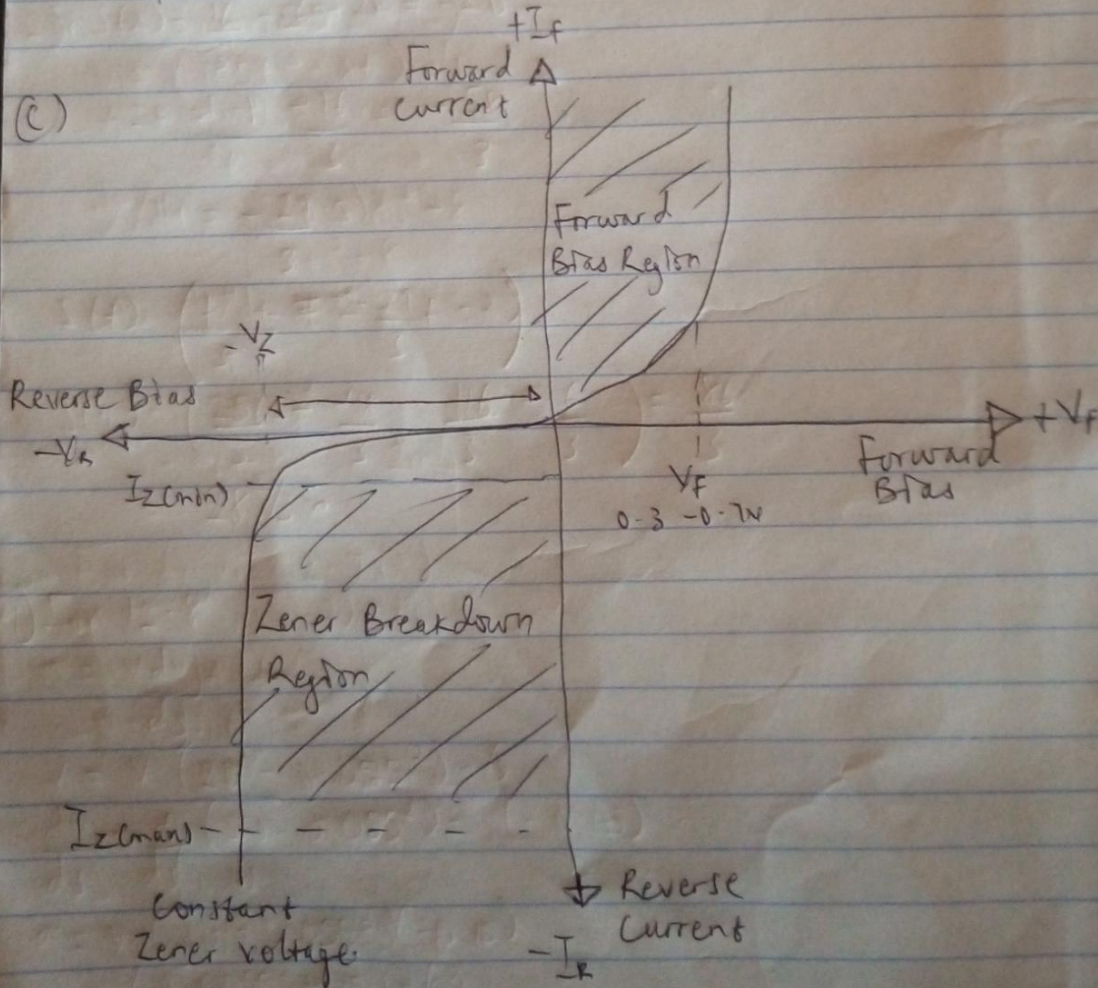
Lawal Teslim
 181ENG061038
 Mechanical Engineering

1) A Zener diode is always operated in its reversed biased condition. A Zener diode regulator is designed to maintain a constant DC output voltage across the load in spite of variations in the input voltage or changes in the load current.

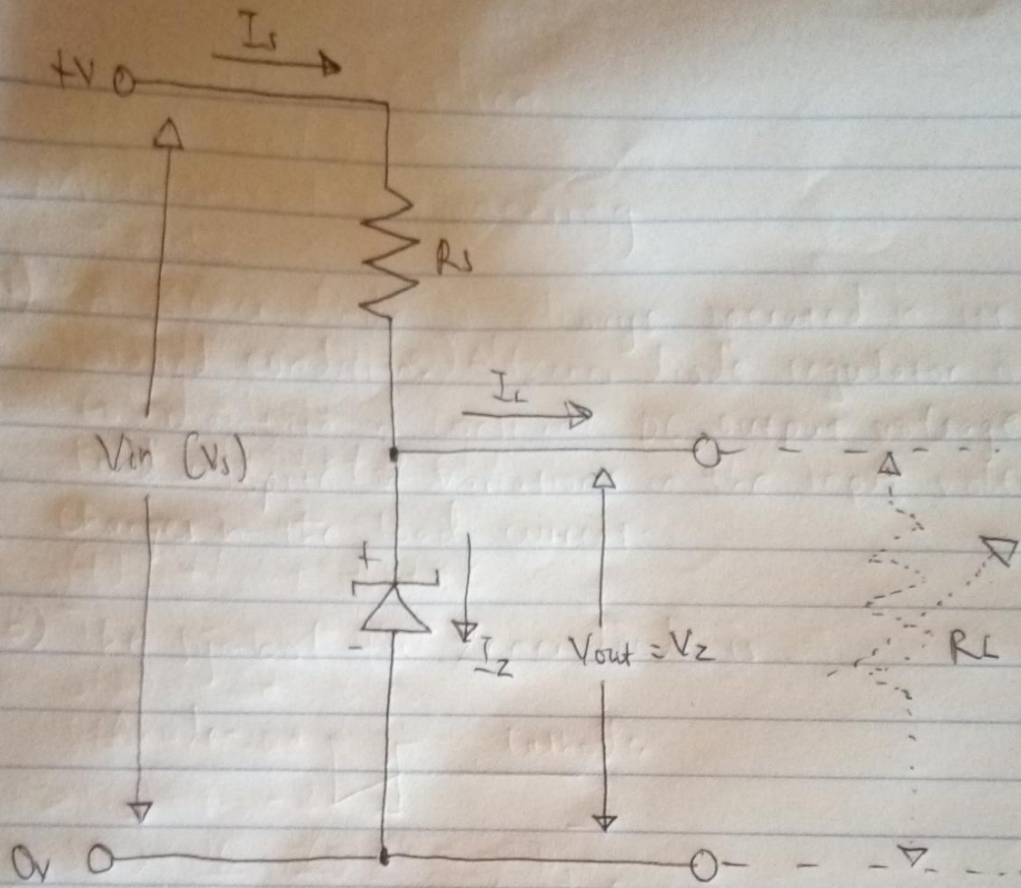
(b) The symbol for Zener diode is



(c)



I-V CHARACTERISTICS CURVE



Circuit Diagram for Zener diode Regulator

2) First voltage of Zener diode

$$V_z = \frac{\text{Watt}}{\text{Current}} = \frac{5}{500\text{mA}} = 10\text{V}$$

Thus minimum value

$$R_s = \frac{20 - 10}{500\text{mA}}$$

$$R_s = 20\Omega$$

2b) Current at 500Ω

$$I_L = \frac{V_z}{R_L} = \frac{10}{500\Omega}$$

$$I_L = 0.02\text{A}$$