NAME: ADAH OSAMA VICTOR

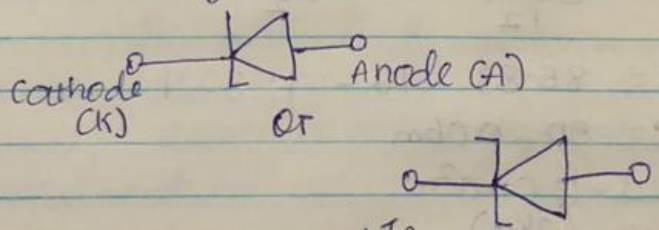
MATRIC NO : 18/ENG02/002

DEPT : COMPUTER ENGINEERING

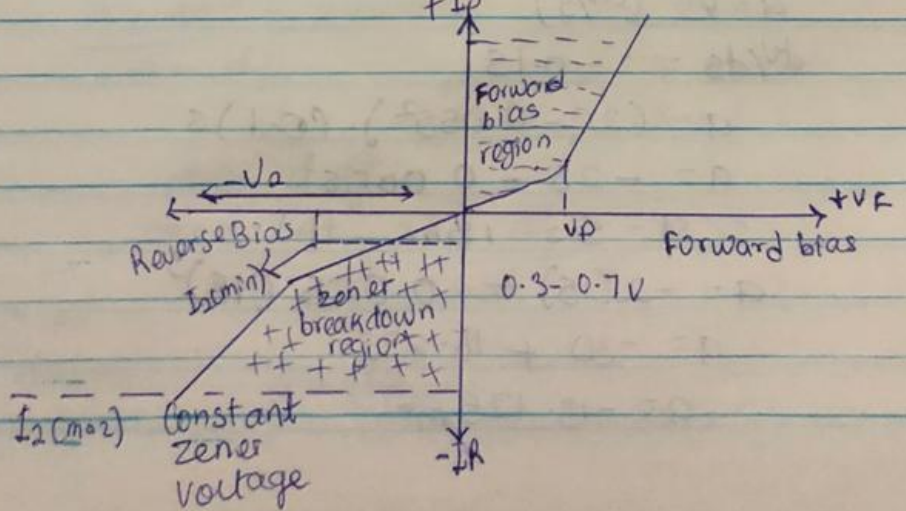
Adah Osama Victor 18/Eng02/004
Computer Engineering
Eng 222 (Basic elect)
Assignment

1. Zener Diode voltage regulator. They are used as shaat voltage regulators to regulate voltage across small loads. Zener diodes have a sharp reverse breakdown voltage and breakdown voltage will be constant for a range of currents. Thus we will connect the zener diode parallel to the load such that the applied voltage will reverse bias it. Thus if the reverse bias voltage across the zener diode exceeds the knee voltage across the load will be constant.

i. Symbol



Or



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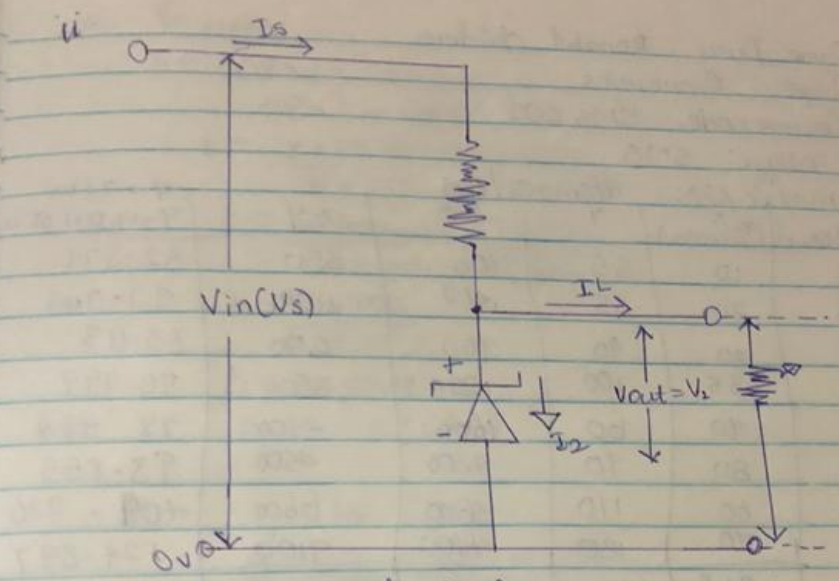

Zener diode Regulator Circuit

2. To determin the minimum value of the series resistor to the Zener diode.

$$R_S = \frac{V_S - V_2}{I_2}$$ weneed to determine V_2

max current = ~~watts~~ / voltage

$$500 = \frac{5}{x}$$

$$x = 10V$$

$V_S = 200max = 12.74 = 0.631 \times 20$

$$R_S = \frac{12.74 - 10}{500} = 4\Omega$$

$$I_L = V_Z / R_L = 10/500 = 20mA$$

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