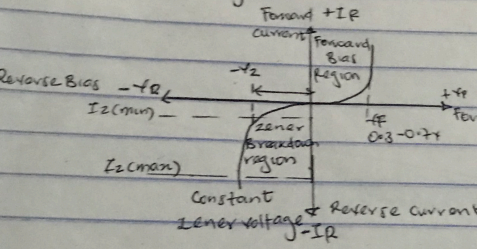
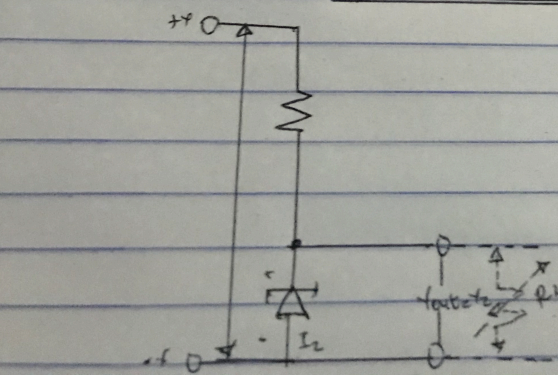
Aigbonoga Emmanuel
18/ENG/06/1006
Mechanical Engineering

) A zener diode is always operated in its reverse biased condition. An such
Simple voltage regulator circuit can be designed using a zener diode to mai
a constant DC output voltage across the load in spite of variations in
pnt voltage or changes in the load current.

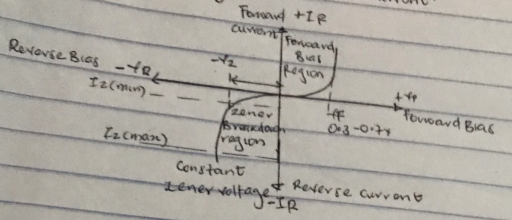


I-V characteristics curve



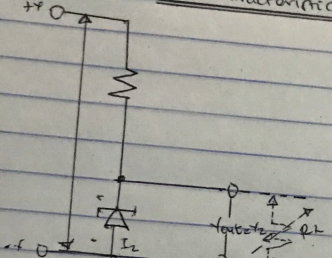
designed using a zener diode to
output voltage across the load in spite of variations
input voltage or changes in the load current.

ii)



iii)

I-V characteristics curve



Circuit diagram

2) $V_S = 20V$ $\quad I_Z = 500mA = 500 \times 10^{-3} A$

$$V_Z = \frac{watt}{current} = \frac{5}{500 \times 10^{-3}} = 10V$$

$$R_S = \frac{V_S - V_Z}{I_Z} = \frac{20 - 10}{0.5}$$

$$R_S = 20\Omega$$

$$R_L = 500\Omega$$

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