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COMPUTER ENGINEERING

18/ENG021007

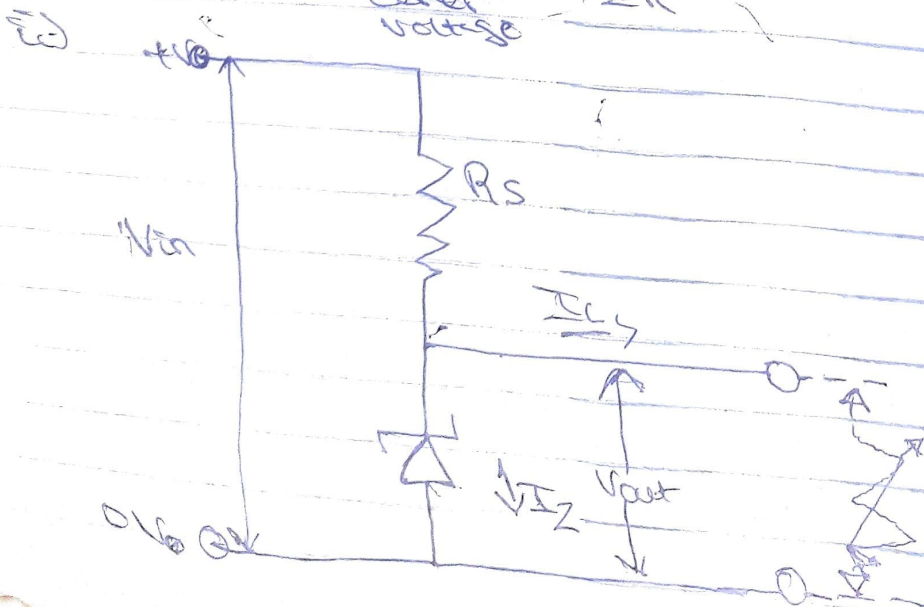
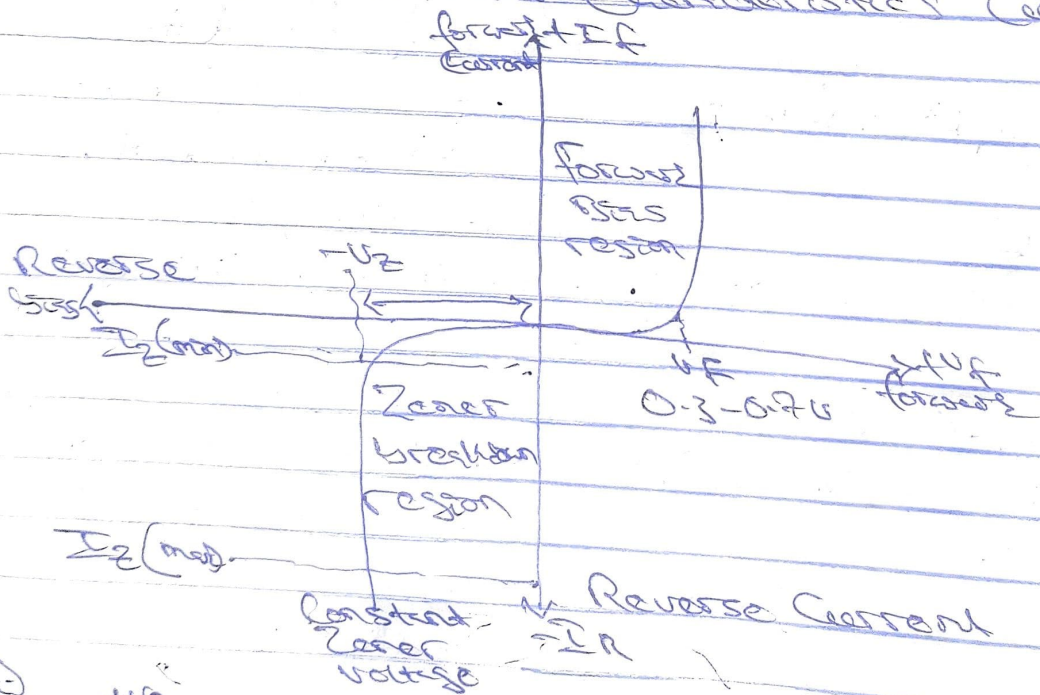
BASIC ELECT (ENG 222)

A Zener diode is a diode similar to the standard PN junction diode but they are specially designed to have a low specified Reverse Breakdown Voltage.

1) sketch the symbol and I-V Characteristics Curve  
Symbol of Zener diode.



Zener diode I-V Characteristics Curve



$$2) \quad V_s = 20V$$

$$V_z = 2$$

$$\text{max current} = 500\text{mA} = 1s$$

$$P_z = 5W$$

$$\Rightarrow \frac{P_z}{V_z} = \frac{5}{500 \times 10^{-3}} = 10V$$

$$\downarrow V_z = 10V$$

$$R_s = \frac{V_s - V_z}{I_z} = \frac{20 - 10}{500 \times 10^{-3}} = \frac{10}{500 \times 10^{-3}} = 20$$

$$R_s = 20\Omega$$

$$\text{Ex) } I_z = 1s - I_L; \quad R_L = \frac{V_L}{I_L} = \frac{10}{500} = \cancel{0.02} 0.02\Omega$$

$$\approx 20\text{m}\Omega$$

$$\therefore I_z = (500 - 20)\text{mA} = 480\text{mA}$$