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DEPT: COMPUTER ENGINEERING

BASIC ELECTRICITY ASSIGNMENT

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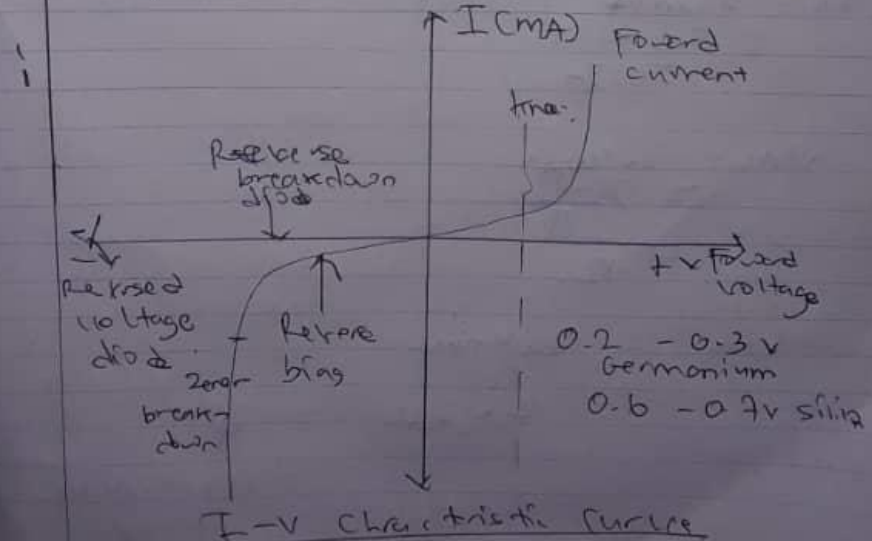
① Zener diodes can be used to produce a stabilized voltage output with low ripple under varying load current conditions. Reverse-biased diodes and bipolar transistor base-emitter junctions that breakdown below the 7 volts. The noise generated by zener diode is a simple shot noise. The zener diode will conduct sufficient current to maintain a voltage drop of Vout



I-V Characteristic curves

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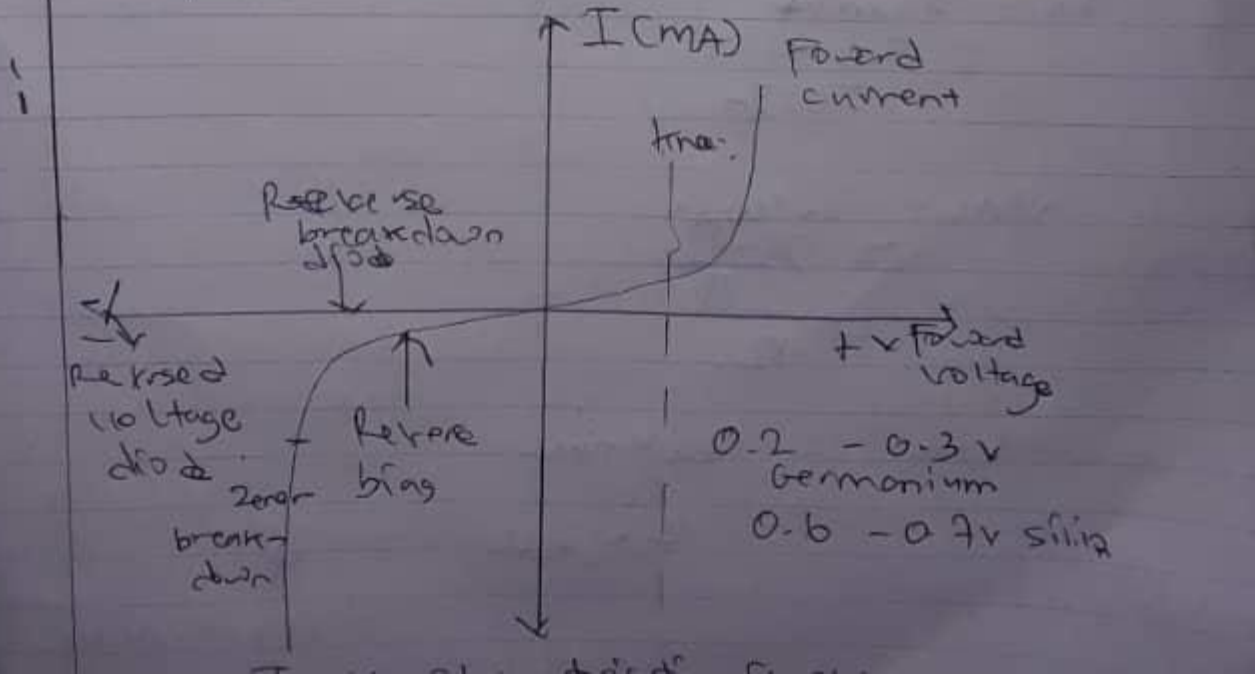
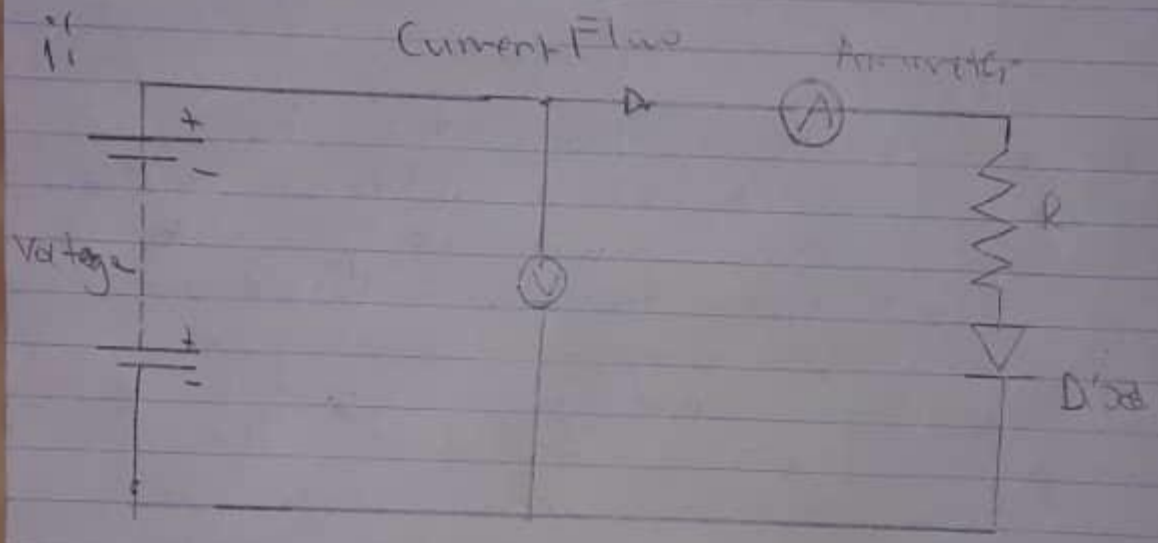


i:

ii:



2 $P = 5w$

$I_R = 500mA$

$= 500 \times 10^{-3}$

$= 0.5A$

$V_{dc} = 20 V_{rms}$

$= \frac{2 \times 20}{\pi}$

$= 12.$

$V_{dc} = \frac{2 \times 20 V_{rms}}{\pi}$

$= \frac{2 \times 20}{\pi} = \frac{40}{\pi}$

(i) The minimum value

$R_s = \frac{V_s - V_2}{I_2}$ V_2 = ?

$P_2 = I_2 V_2$

$V_2 = \frac{P_2}{I_2} = \frac{5}{0.5}$

$= 10V$

$R_s = \frac{12 - 7.3 - 10}{0.5} = \frac{2.73}{0.5}$

$= 5.46\Omega$

(ii) The current across diod

$I_L = \frac{V_2}{R_L}$

$= \frac{10}{500}$

$= 0.02A$

$I_L = 20mA$

3Vdc