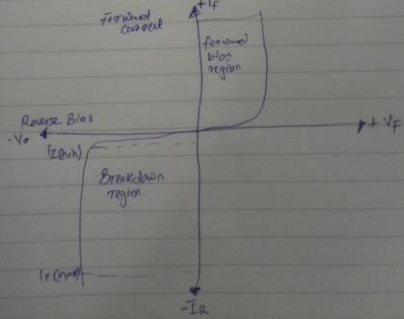
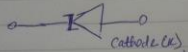
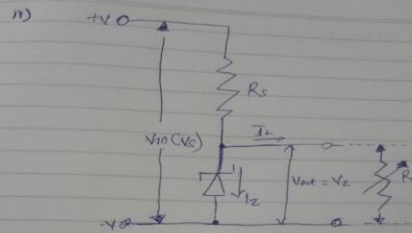


Thezavire Chavouma  
18/Elec/1045  
Basic Elect

1) A Zener diode regulator provides a constant output voltage to a load connected in parallel with it in spite of the ripples in the supply voltage or the variation in the load current.



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2) Max. power = 5W  $I_Z = 300\text{mA} = 0.3\text{A}$ ,  $20\text{V} \times 0.3 = V_Z$   
 Max current =  $\frac{\text{max Power}}{\text{Voltage}} = \frac{5\text{W}}{10} = 0.5\text{A}$

$\therefore V_Z = 10\text{ volts}$   
 Minimum resistance:  $\frac{V_S - V_Z}{I_Z}$   $V_{dc} = 0.637 V_{max}$   
 $= 0.637 \times 20 = 12.74\text{ Vdc}$

Minimum resistance =  $\frac{12.74 - 10}{0.5} = 5.48\ \Omega$

ii) Load current  $I_L = \frac{V_Z}{R_L} = \frac{10}{500} = 0.02\text{A}$  or  $20\text{mA}$

$I_Z = I_S - I_L$   
 $= 500 - 20 = 480\text{mA}$