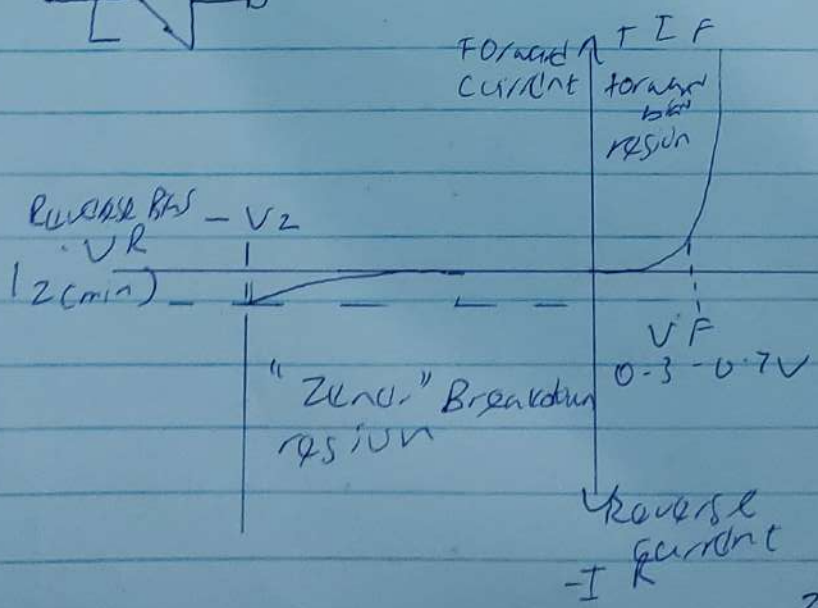
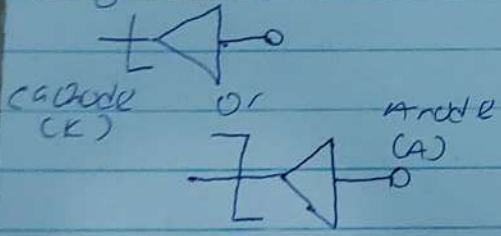


Name: Elegbe Caleb Osigbodi
 MAT NO: 181ENG021058
 DEPT: Computer Engineering
 Assignment

1) The Zener diode is used in its "reverse bias" or reverse breakdown mode, i.e. the diode's anode connects to the negative supply. The Zener diode has a region in its reverse bias characteristics of almost a constant negative voltage regardless of the value of the current flowing through the diode. This remains nearly constant even with large changes in current as long as the Zener diode's current remains between a breakdown current $I_{Z(min)}$ & max current rating $I_Z(max)$.

ii) V_{in}
 DC input voltage from rectifier or smoothing circuit

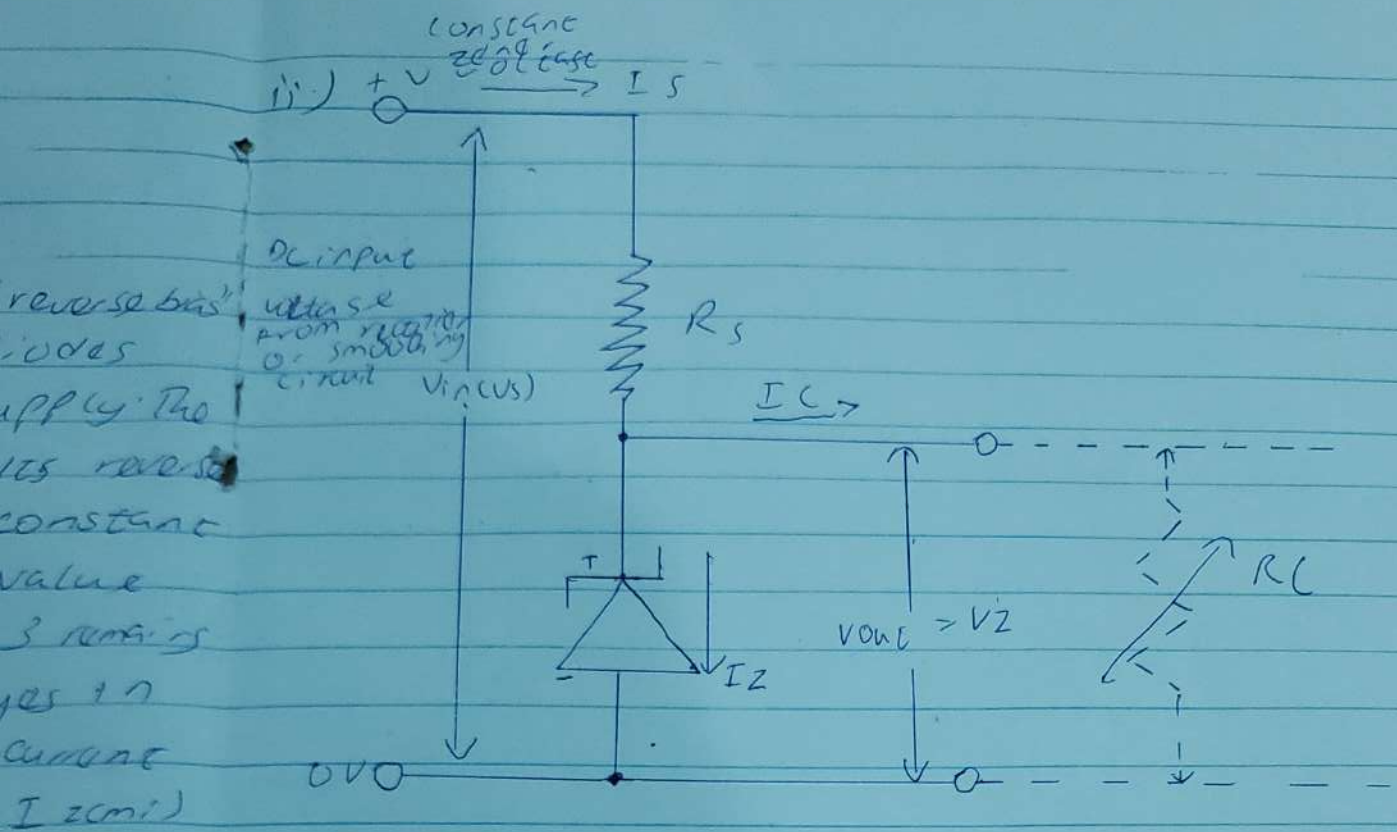
i) Symbol



Zener diode I-V characteristics

2) V_{max}

i) I
 V_F forward bias
 (i)



Zener diode regulator

2) $V_S = 20V$

$V_Z = 2$

max current = $500mA = 15$

$P_Z = 5W$

i) $I = \frac{P_Z}{V_Z} = \frac{5}{500 \times 10^{-3}} = 10V$

$\therefore V_L = 10V$

$R_S = \frac{V_S - V_L}{I_C} = \frac{20 - 10}{500 \times 10^{-3}} = \frac{10}{500 \times 10^{-3}} = 20$

$R = 20 \Omega$

(ii) $I_Z = 15 - I_L$ $I_L = \frac{V_L}{R_L} = \frac{10}{500} = 0.02$

$= 20mA$

$\therefore I_Z = (500 - 20) mA = 480mA$

01-V
 1515