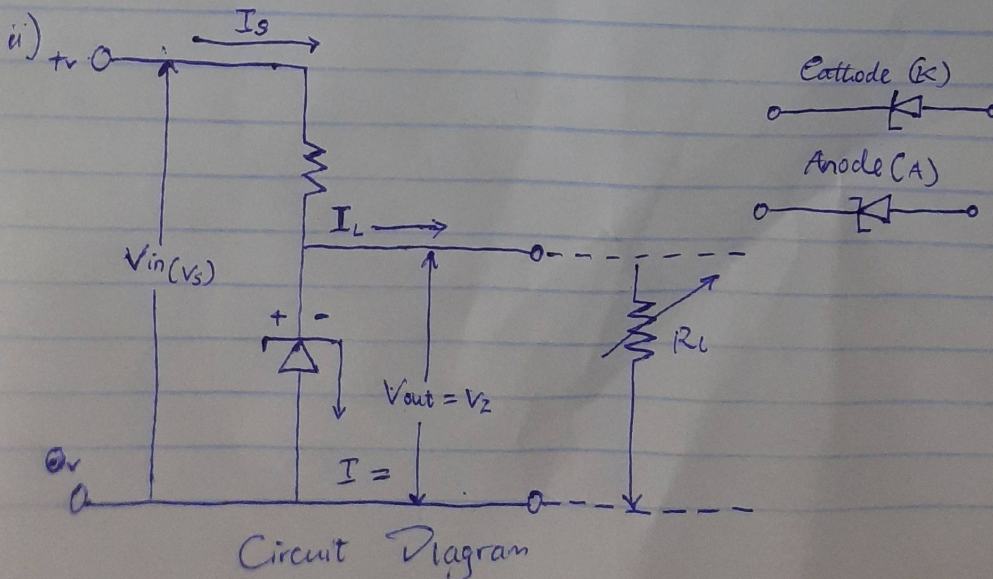
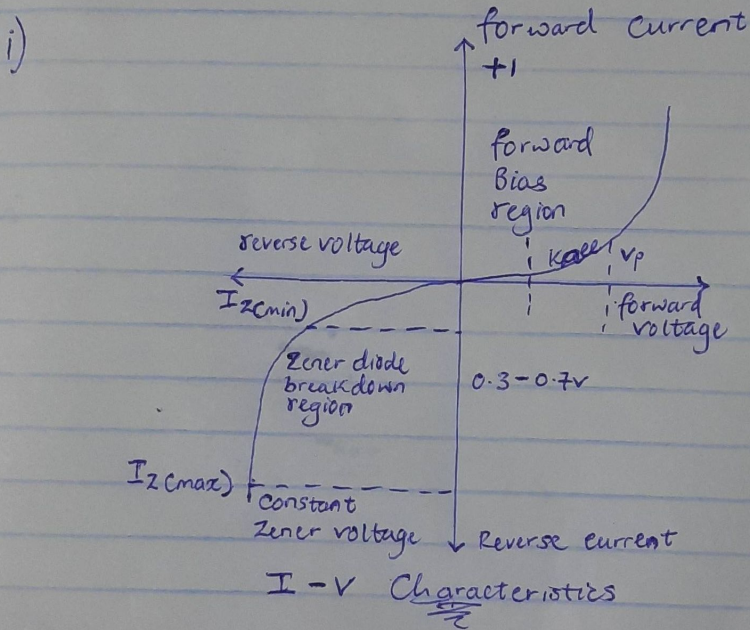


ENAYORU PROSPER SEROMU  
 CHEMICAL ENGINEERING  
 1916NG011018  
 BASIC ELECT, ENG 222

## 2) Zener diode Regulator

The main function of a Zener diode regulator is to provide 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 and the Zener diode will continue to regulate the voltage until the diodes current falls below the minimum  $I_Z$  value in the reverse break-down region.



2i) Voltage of the zener diode

$$V_z = \frac{\text{Power}}{\text{Current}}$$

$$= \frac{5}{500\text{mA}} = 10\text{V}$$

$$R_s = \frac{V_s - V_z}{I_z}$$

$$= \frac{20 - 10}{500\text{mA}}$$

$$R_s = 20\Omega$$

2ii) The current across the diode at full load of 500Ω

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

$$= \frac{10}{500\Omega}$$

$$= 0.02\text{A}$$