1. The *zener diode* is the simplest types of voltage regulator and the point at which a zener diode breaks down or conducts is called the “Zener Voltage” ( Vz ). The **Zener diode** is like a general-purpose signal diode consisting of a silicon PN junction. When biased in the forward direction it behaves just like a normal signal diode passing the rated current, but as soon as a reverse voltage applied across the zener diode exceeds the rated voltage of the device, the diodes breakdown voltage is reached at which point a process called *Avalanche Breakdown* occurs in the semiconductor depletion layer and a current starts to flow through the diode to limit this increase in voltage.

i.



ii.

1. Power = 5w

Max current = 500Ma

Max current = watts/voltage

Voltage = watts/max current

V = 5w/500Ma

V = 10v

RS = VS – Vz/IZ

Rs  = 20v – 10v/500mA

Rs = 0.02ohms

IL = VZ/RL

IL = 10v/500ohms

IL = 2mA