TUTORIAL-1
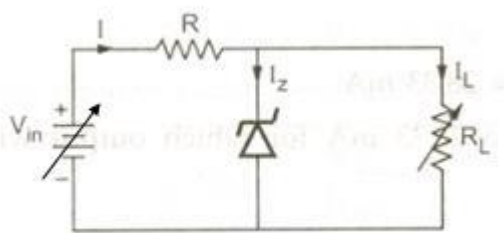
1. Design zener regulator for given specification.

Vin varies from 15V to 18V

RL varies from 225Ω to 2KΩ

VZ=9V

IZ(min)=10mA

Pd(max)=4.5W

2. The output power from an amplifier is 50mW when the signal frequency is 5KHz. The output power falls to 25mw when the freq is 20 KHz. Calculate the power change in decibels.

3. An amplifier has a voltage gain of 100 at 1KHz. The gain falls by 6dB at 1MHz, if the input is 3mW at 2MHz. calculate the output voltage.

4. A full wave bridge rectifier supplies a load of 2Kohm, the AC voltage applied is 200 V at the secondary of transformer. If capacitor of 500 microF is connected across the load, find i) Ripple factor ii) DC output voltage iii) DC load current iv) % of regulation.

5. A bridge rectifier has a supply 20 V to a 500 ohm load, the peak to peak ripple should not exceed 10% of average output voltage and the AC input frequency is 60 Hz. Calculate the capacitor value.

6. A silicon transistor has its Ico=6nA and α=0.98. If Ib=0 and Vce= 4V then Ic=---------------

   An NPN transistor has lco=30nA, Ib=0, Vce=4V and Ic=30uA .The value of β=-------------

7. a)Three amplifiers of voltage gain 20dB, 26dB and 32dB are cascaded to obtain an output voltage of 2V. Calculate the input voltage needed.

b) An amplifier having a power gain of 17dB delivers a power output of 40W to a load of 1KΩ. Calculate i) the input power needed and ii) the input voltage needed, if the voltage gain of the amplifier is 38dB.