ENEE2360 CH2 Homework part2

Problem1.

A certain full-wave rectifier has a peak output voltage of 30 V. A 50 µF capacitor filter is connected to the rectifier.

a) Calculate the peak-to-peak ripple and the dc output voltage developed across a 600 Ω load resistance.

b) Determine the ripple factor.

Problem2.

What value of filter capacitor is required to produce a 1% ripple factor for a full-wave rectifier having a load resistance of 1.5 kΩ? Assume the rectifier produces a peak output of 18 V.

Problem3.

A full-wave rectifier produces an 80 V peak rectified voltage from a 60 Hz ac source. If a10 µF filter capacitor is used, determine the ripple factor for a load resistance of 10 kΩ.

Problem4.

Determine the peak-to-peak ripple and dc output voltages in Fig(1). The transformer has a 36 V rms secondary voltage rating, and the line voltage has a frequency of 60 Hz. The diodes have Vk = 0.7V

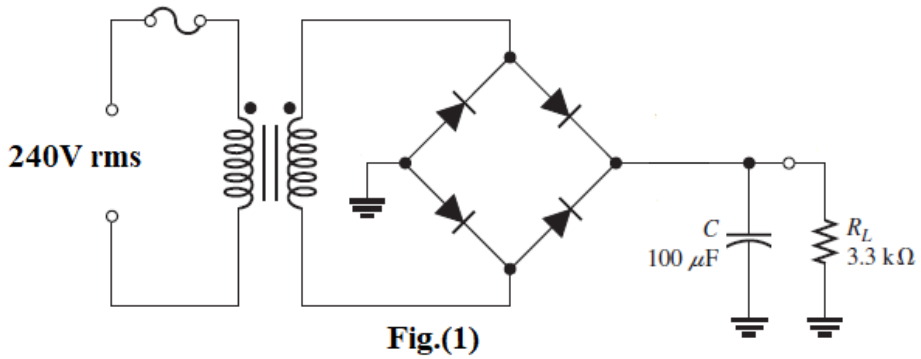

Fig.(1)

Problem5.

a) Determine *VL* , *IL* , *IZ* , and *IR* for the network of Fig.(2)if *RL* = 180 Ω.

b) Repeat part (a) if *RL* = 470 Ω.
c) Determine the value of *RL* that will establish maximum power conditions for the Zener diode.
d) Determine the minimum value of *RL* to ensure that the Zener diode is in the "on" state.

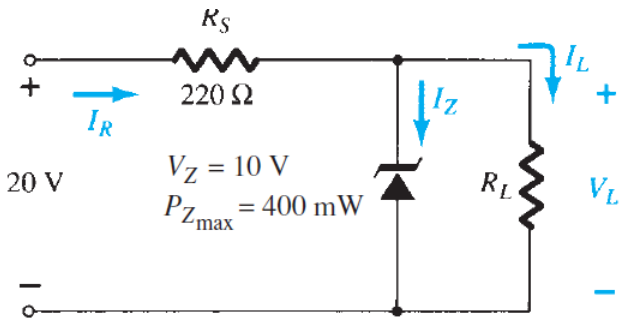

Fig.(2)

Problem6.

For the network of Fig. (3), determine the range of *Vi* that will maintain *VL* at 8 V and not exceed the maximum power rating of the Zener diode.

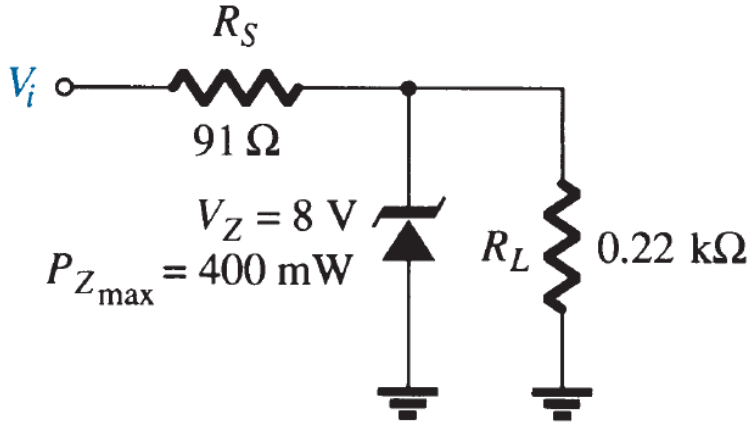

Fig.(3)