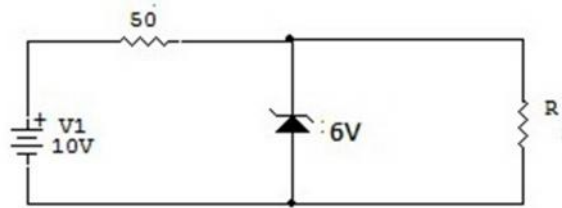
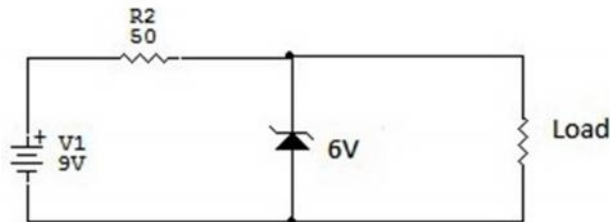


## Diode Circuits

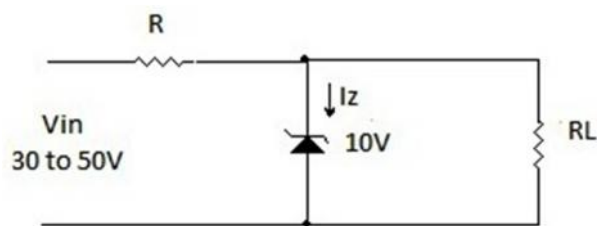
1. The 6V zener diode below has zero Zener resistance and a knee current of 5mA. The minimum value of R, so that the voltage across it does not fall below 6V is



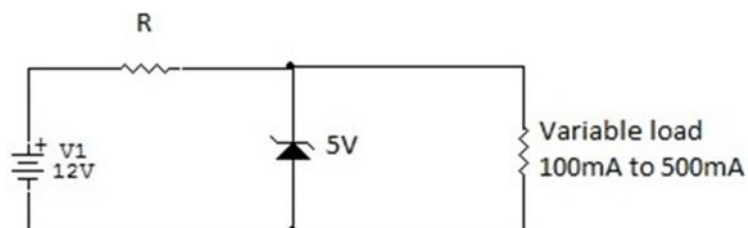
2. A zener diode in the circuit shown in below figure has a knee current of 5mA and a maximum power dissipation of 300mW. What are the minimum and load currents that can be drawn steadily from the circuit, keeping the output voltage at 6V?



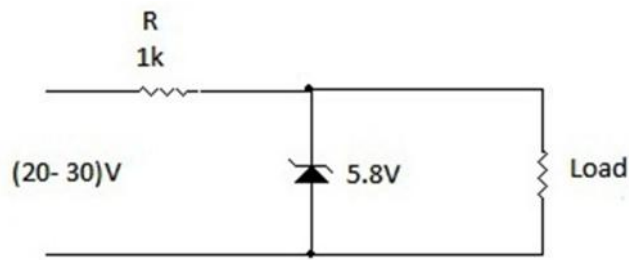
3. A zener diode regulator in the fig is to be designed to meet the specification  $I_L = 10\text{mA}$ ,  $V_o = 10\text{V}$  and  $V_{in}$  varies from 30V to 50V. The zener diode has  $V_z = 10\text{V}$  and knee current  $I_{zk} = 1\text{mA}$ . Find the minimum, value of R for satisfactory operation



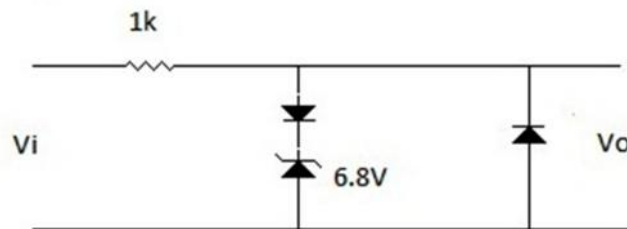
4. In the voltage regulator shown in the figure .the load current can vary from 100mA to 500mA. Assuming that the zener diode is ideal, the value of R is



5. The zener diode in the regulator circuit shown in the figure has a zener voltage of 5.8V and a zener knee current of 0.5mA. The maximum load current drawn from this circuit ensuring proper functioning over the input voltage range between 20 and 30V is \_\_\_\_\_



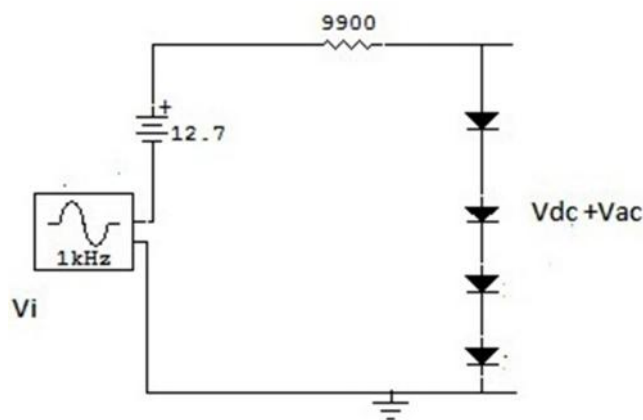
6. In the following limiter circuit an input voltage  $V_i = 10\sin 100\pi t$  is applied. Assume that the diode drop is 0.7V when it is forward biased. The zener breakdown voltage is 6.8V. The maximum and minimum values of the output voltage respectively are \_\_\_\_\_, \_\_\_\_\_



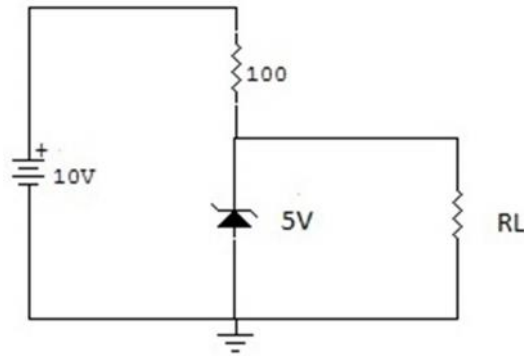
7. In the circuit shown below, assume that the voltage drop across a forward biased diode is 0.7V. The thermal voltage  $V_T = KT/q = 25\text{mV}$ . The small signal input  $V_i = V_p \cos \omega t$  where  $V_p = 100\text{mV}$

a) The bias current  $I_{dc}$  through the diode is \_\_\_\_\_

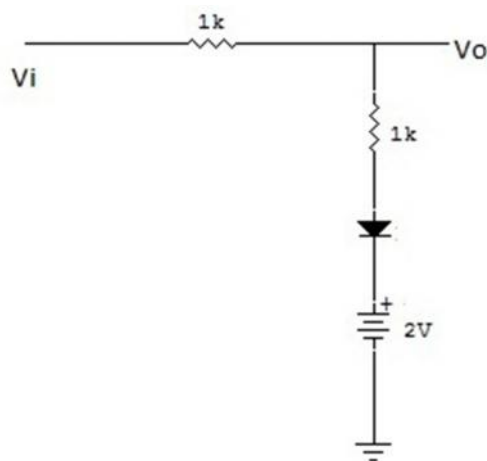
b) The ac output voltage  $v_{ac}$  is \_\_\_\_\_



8. In the circuit shown below, the knee current of the ideal zener diode is 10mA. To maintain 5V across  $R_L$ , the min value of  $R_L$  in ohm and the min power rating of the zener diode in mw respectively are \_\_\_\_\_ and \_\_\_\_\_



9. The diode in the circuit shown has  $V_{on} = 0.7V$  but is ideal otherwise. If  $V_i = 5\sin\omega t$  V. The min and max values of  $V_o$  are



10. In the circuit shown below has to function as a clamping circuit, then what is the condition that should be satisfied for the sinusoidal signal of period T?

