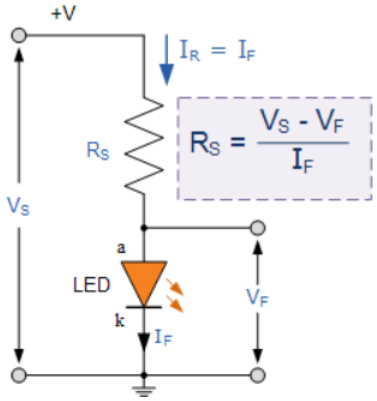
TUTORIAL 2

1

The diffusion constant for holes in Si is $13cm^2/sec$. What is the diffusion current density if the gradient of the hole concentration, $\frac{dp}{dx} = -2\times10^{14}$ holes/cm^3/cm?

2

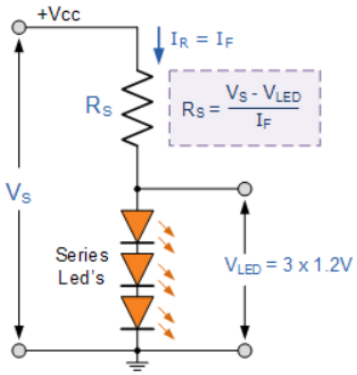
An amber coloured LED with a forward volt drop of 2 volts is to be connected to a 5.0v stabilised DC power supply. Using the circuit above calculate the value of the series resistor required to limit the forward current to less than 10mA. Also calculate the current flowing through the diode if a 100Ω series resistor is used instead of the calculated first.



3

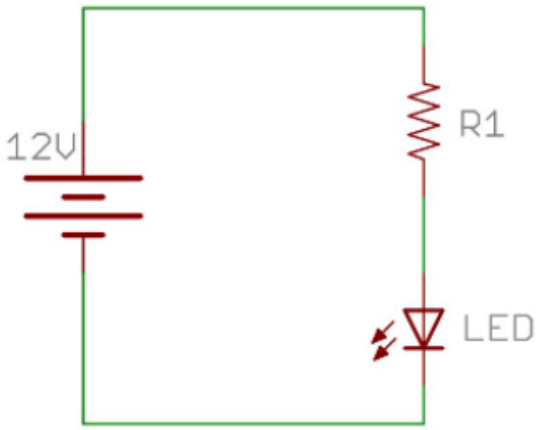
Repeat above problem if following is the circuit diagram

Connecting LED's in Series



4

Calculate the power rating for the resistor R1



LED forward voltage = 3.9V
LED forward current = 1400mA

5

Determine v_o for the following network with the input shown (for ideal diode).