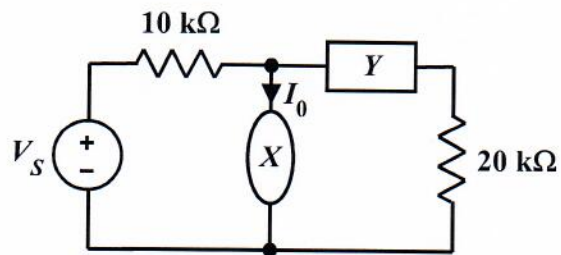


**Homework Problem #019**

$X$  and  $Y$  are linear components. If  $I_0 = 15 \text{ mA}$  when  $V_S = 60 \text{ V}$ , what will be the new value of  $I_0$  if  $V_S$  is decreased to  $20 \text{ V}$ ?



Assume  $I_0 = K V_S$

Then  $15 \text{ mA} = K (60 \text{ V})$

$$\Rightarrow K = \frac{15 \text{ mA}}{60 \text{ V}} = \frac{1}{4} \times 10^{-3} \frac{\text{A}}{\text{V}}$$

So  $I_0 = \left( \frac{1}{4} \times 10^{-3} \right) (20) = 5 \text{ mA}$