#Jenny

Finally I get this ebook, thanks for all these I can get now!

#Rio

Cool! I'am really happy

#Markus Jensen

I did not think that this would work, my best friend showed me this website, and it does! I get my most wanted eBook

#Hun Tsu

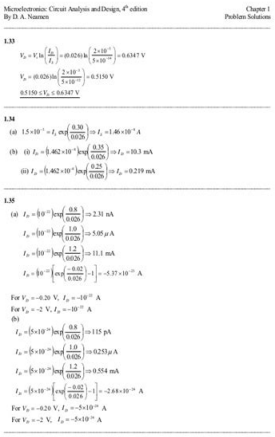
wtf this great ebook for free?!

#Che Salsa

My friends are so mad that they do not know how I have all the high quality ebook which they do not!

#Diego Butler

so many fake sites. this is the first one which worked! Many thanks



Microelectronics: Circuit Analysis and Design, 4th edition — Chapter 1
By D. A. Neamen — Problem Solutions

1.33

$$V_D = V_t \ln\left(\frac{I_D}{I_s}\right) = (0.026)\ln\left(\frac{2\times10^{-3}}{5\times10^{-16}}\right) = 0.6347 \text{ V}$$

$$V_D = (0.026)\ln\left(\frac{2\times10^{-3}}{5\times10^{-15}}\right) = 0.5150 \text{ V}$$

$$0.5150 < V_D < 0.6347 \text{ V}$$

1.34

(a) $1.5\times10^{-3} = I_s \exp\left(\frac{0.30}{0.026}\right) \Rightarrow I_s = 1.46\times10^{-16}$ A

(b) (i) $I_D = (0.462\times10^{-3})\exp\left(\frac{0.35}{0.026}\right) \Rightarrow I_D = 10.3$ mA

(ii) $I_D = (0.462\times10^{-3})\exp\left(\frac{0.25}{0.026}\right) \Rightarrow I_D = 0.219$ mA

1.35

(a) $I_D = (5\times10^{-16})\exp\left(\frac{0.8}{0.026}\right) \Rightarrow 2.31$ mA

$I_D = (10^{-16})\exp\left(\frac{1.0}{0.026}\right) \Rightarrow 5.05\,\mu$A

$I_D = (10^{-15})\exp\left(\frac{1.2}{0.026}\right) \Rightarrow 11.1$ mA

$I_D = (10^{-16})\left[\exp\left(\frac{-0.02}{0.026}\right) - 1\right] = -5.37\times10^{-16}$ A

For $V_D = -0.20$ V, $I_D = -10^{-16}$ A

For $V_D = -2$ V, $I_D = -10^{-15}$ A

(b)

$I_D = (5\times10^{-16})\exp\left(\frac{0.8}{0.026}\right) \Rightarrow 115$ pA

$I_D = (5\times10^{-16})\exp\left(\frac{1.0}{0.026}\right) \Rightarrow 0.253\,\mu$A

$I_D = (5\times10^{-15})\exp\left(\frac{1.2}{0.026}\right) \Rightarrow 0.554$ mA

$I_D = (5\times10^{-16})\left[\exp\left(\frac{-0.02}{0.026}\right) - 1\right] = -2.68\times10^{-16}$ A

For $V_D = -0.26$ V, $I_D = -5\times10^{-16}$ A

For $V_D = -2$ V, $I_D = -5\times10^{-15}$ A