M R

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فيزياء	استاتيكا
دوائر كهربية	الكترونيات
ميكانيكا الانشائات	هيدروليكا

مدرس خصوصي

اونلاين حضوري

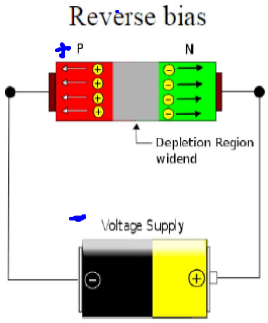
يحصل الطالب علي

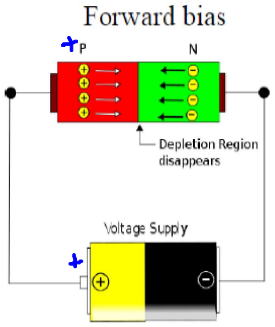
- مقاطع فيديوهات لشرح المقرر بشكل وافي
- ملخص للمادة Pdf للمذكرة والمراجعة
- محاضرات مباشرة علي برنامج زووم
- لمناقشة الأجزاء الغير مفهومة
- تواصل مستمر مع معلم المادة

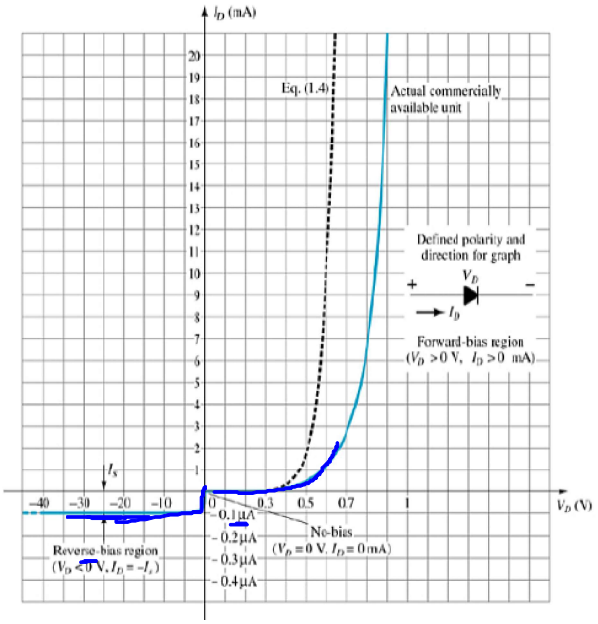
للتواصل

0567630097

0565657741

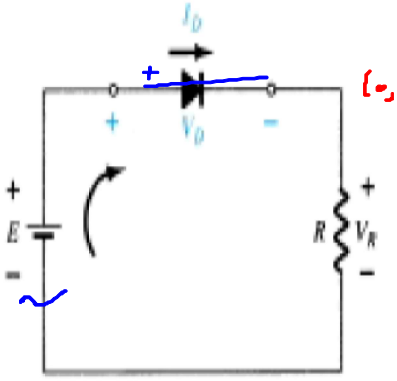


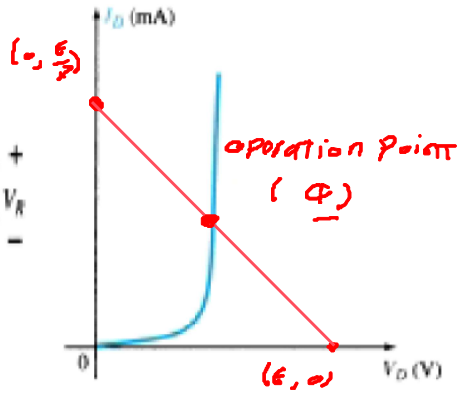




2.1 LOAD-LINE ANALYSIS

Consider the network of the following Fig. employing a diode having the shown characteristics.





$I_D R$

$-E + V_D + V_R = 0$

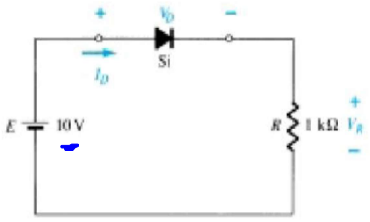
$E = V_D + I_D R$

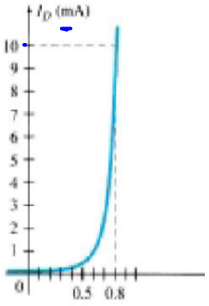
$V_D = 0$	$I_D = 0$
$E = I_D R$	$E = V_D$
$I_D = \frac{E}{R}$	$(E, 0)$
$(0, \frac{E}{R})$	

EXAMPLE 2.1

For the series diode configuration of the following Fig. employing the diode characteristics of given Fig. determine:

V_{DQ} and I_{DQ}.





$V_D = 0$

$I = \frac{E}{R} = \frac{10}{1000}$

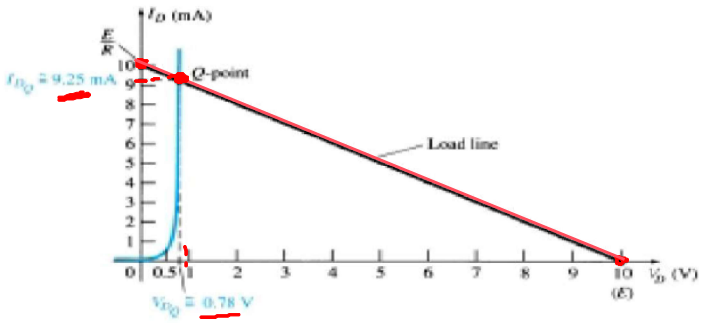
$I = 10\,mA$

$(0, 10)$

$I_D = 0$

$E = V_D = 10V$

$(10, 0)$



I_{DQ} = 9.25 mA

EXAMPLE 2.2

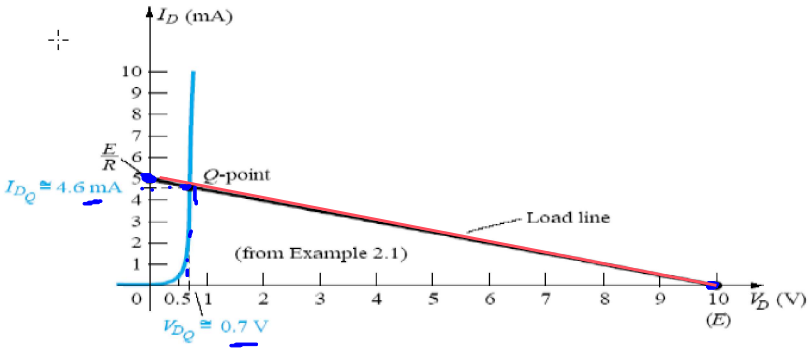
Repeat the analysis of Example 2.1 with $R = 2\ k\Omega$.

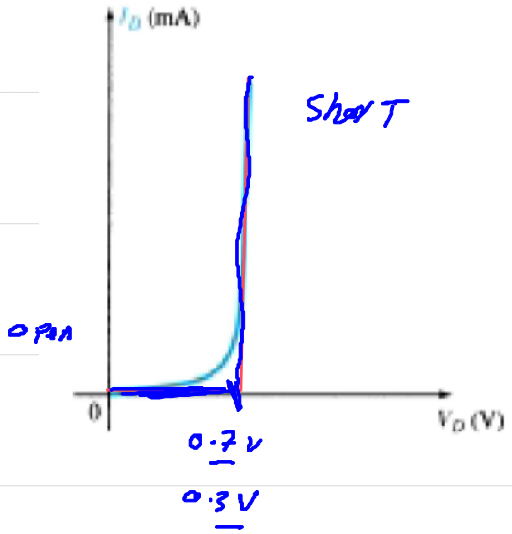
$I = 5\,mA$

$(0, 5)$

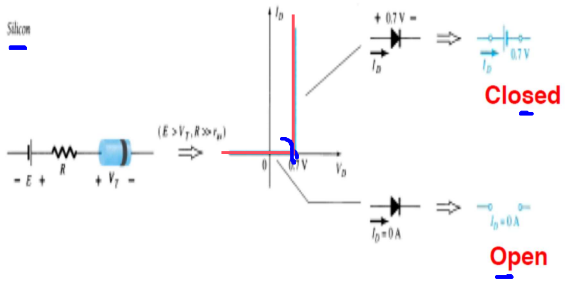
V_D

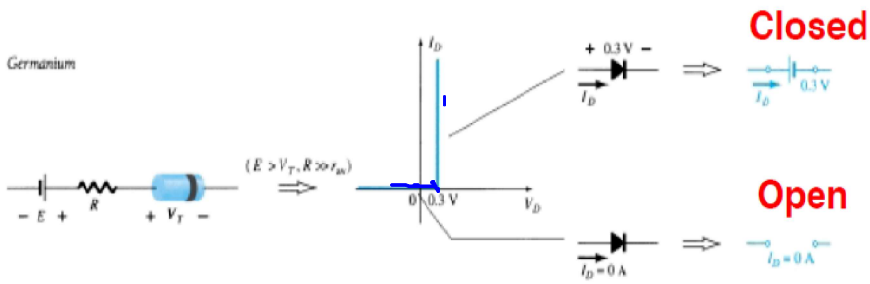
$(10, 0)$

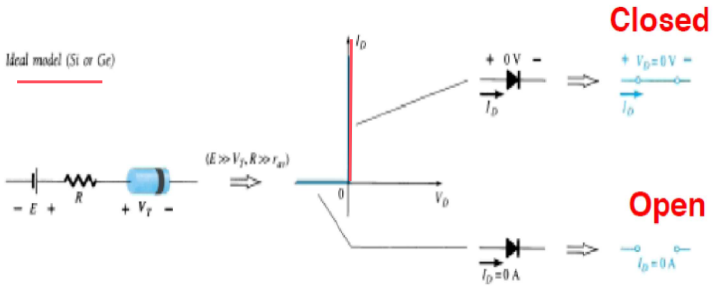




Approximate and Ideal Semiconductor Diode Models

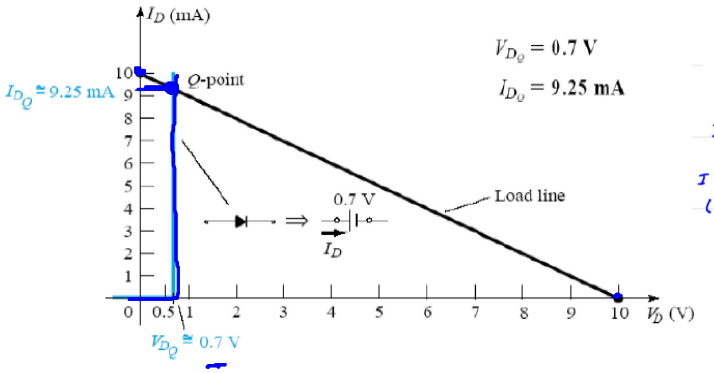


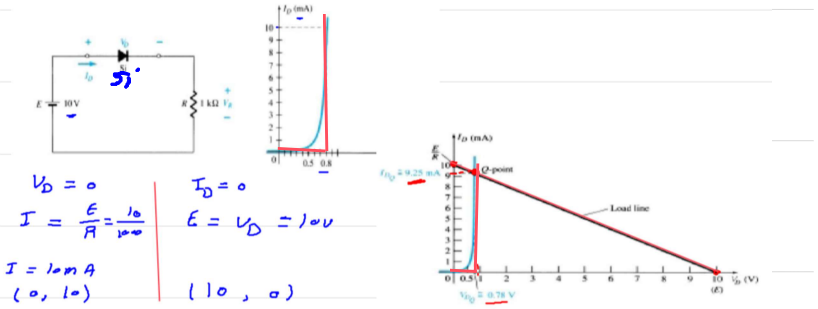




EXAMPLE 2.3

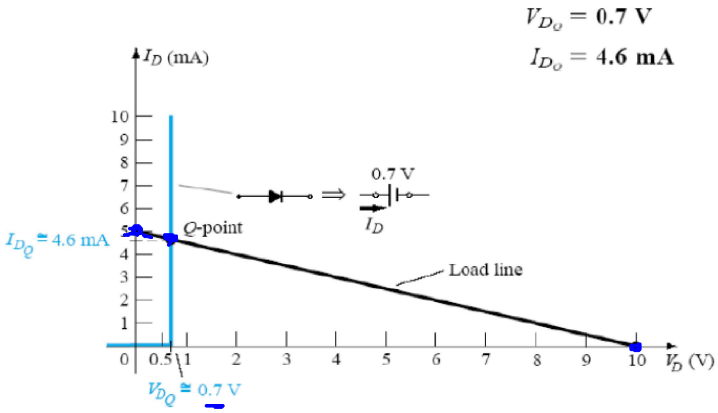
Repeat Example 2.1 using the approximate equivalent model for the silicon semiconductor diode.





EXAMPLE 2.4

Repeat Example 2.2 using the approximate equivalent model for the silicon semiconductor diode.



EXAMPLE 2.2

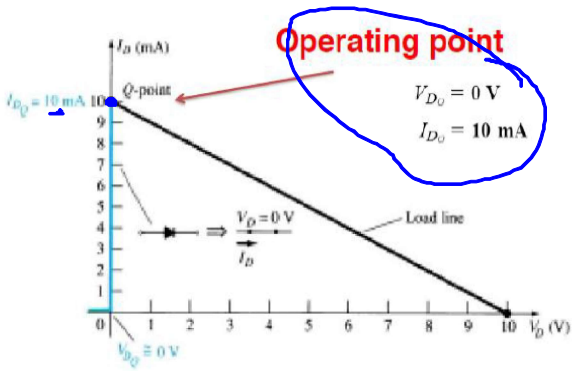
Repeat the analysis of Example 2.1 with $R = 2\ k\Omega$.

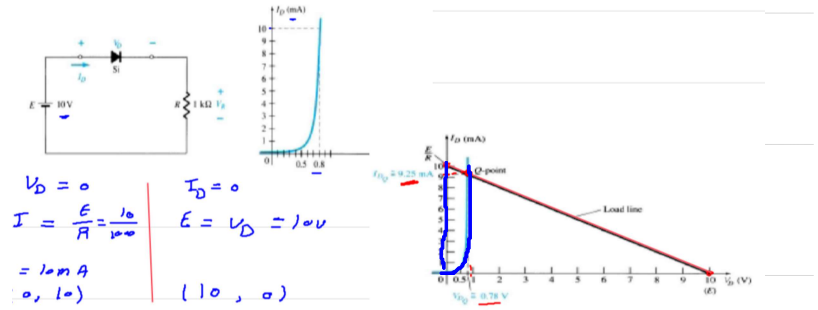
$I = 5mA$ | V_D

(0, 5) | (10, 0)

EXAMPLE 2.5

Repeat Example 2.1 using the ideal diode model.



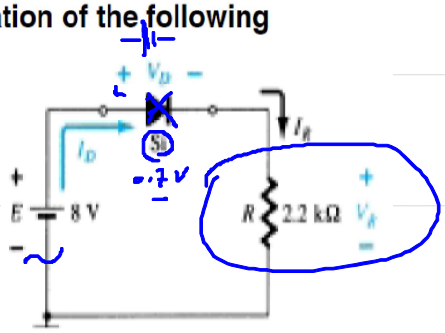


2.3 SERIES DIODE CONFIGURATIONS WITH DC INPUTS

$V_D = 0.7$

EXAMPLE 2.6

For the series diode configuration of the following Fig. determine V_D, V_R, and I_D.



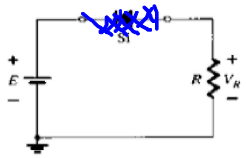
$-8 + 0.7 + V_R = 0$

$V_R = 7.3$ volt

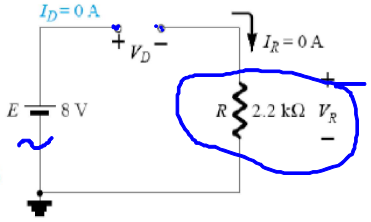
$I_D = \frac{V}{R} = \frac{7.3}{2.2} = 3.32 \times 10^{-3} A = 3.32$ mA

EXAMPLE 2.7

Repeat Example 2.6 with the diode reversed.



Determining the unknown quantities

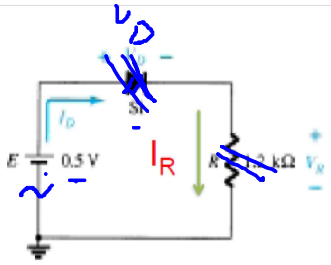


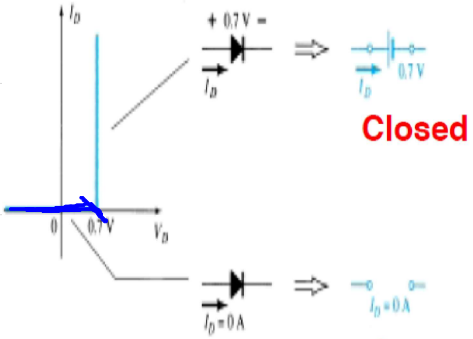
$I_D = 0$

$-8 + V_D + \cancel{X}R = 0 \Rightarrow V_D = 8$ V

EXAMPLE 2.8

For the series diode configuration of the following Fig., determine V_D, V_R, and I_D.



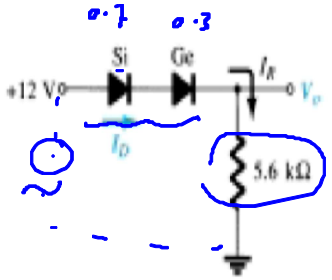


$I_D = 0$, $V_R = IR = (0)(1.2) = 0$

$-0.5 + V_D + 0 = 0 \Rightarrow V_D = 0.5\ V$

EXAMPLE 2.9

Determine V_o and I_D for the series circuit of the following Fig.



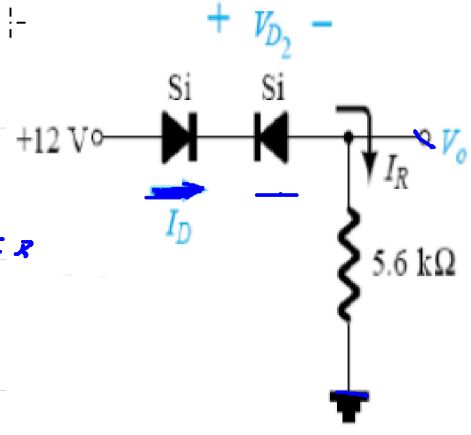
$-12 + 0.7 + 0.3 + V_R = 0$

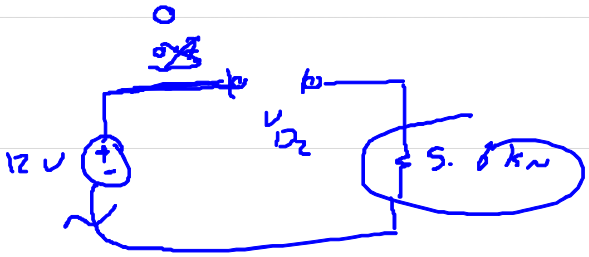
$V_R = 11\ V$

$I_D = \frac{V_R}{R} = \frac{11}{5.6\ k\Omega} = 1.96\ mA$

EXAMPLE 2.10

Determine I_D, V_{D2}, and V_o for the circuit of following Fig.





$I_D = 0$, $V_o = 0$, $-12 + V_{D_2} = 0 \Rightarrow V_{D_2} = 0$