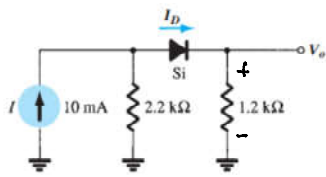


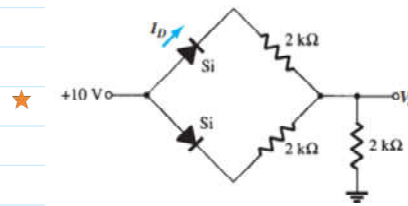
Diodos

viernes, 10 de julio de 2020 22:58

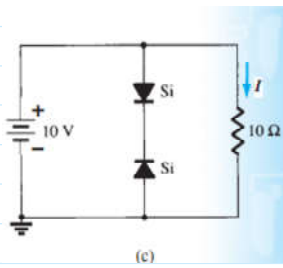
★ Ejemplo 1



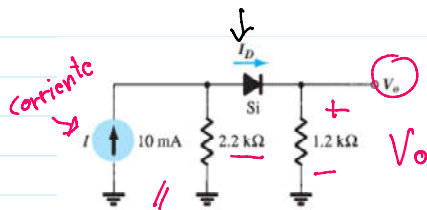
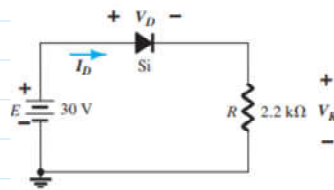
★ Ejemplo 3



★ Ejemplo 2



★ Ejemplo 4

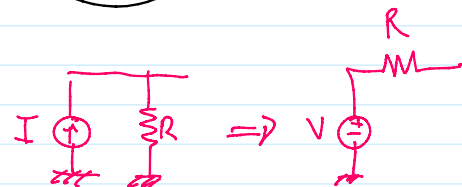


$$\frac{I_D = ?}{1}$$

$$\frac{V_o = ?}{2}$$



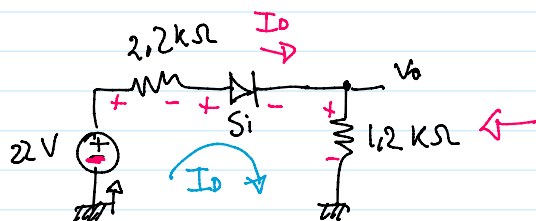
$V_D = 0,7 \text{ V}$ silicio.



$$V = I \cdot R$$

$$V = 100 \text{ mA} \cdot 2,2 \text{ k}\Omega$$

$$\underline{V = 22 \text{ V}}$$



Malla. I_D

$$-22 + V_{2,2k} + V_D + V_{1,2k} = 0$$

$$22 - V_D = V_{2,2k} + V_{1,2k} \quad V_D$$

$$22 - 0,7 = I_D \cdot 2,2k + I_D \cdot 1,2k$$

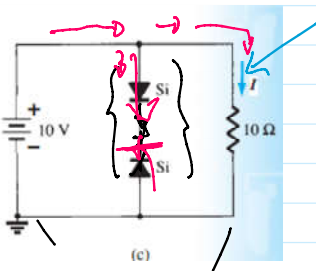
$$21,3 = I_D (2,2k + 1,2k)$$

$$\frac{21,3}{(2,2k + 1,2k)} = I_D = \frac{6,26mA}{R/I}$$

$$V_o = I_D \cdot 1,2k$$

$$V_o = 6,26mA \cdot 1,2k$$

$$V_o = 7,51V \quad R/I$$

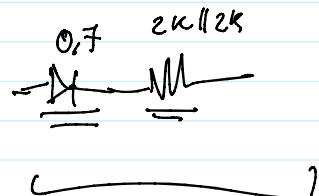
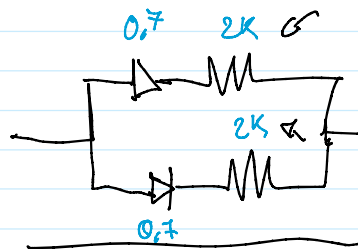
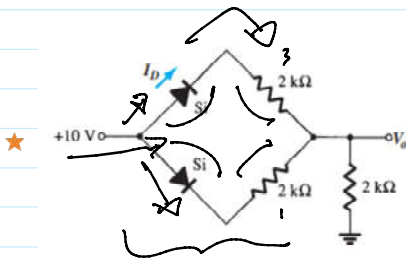
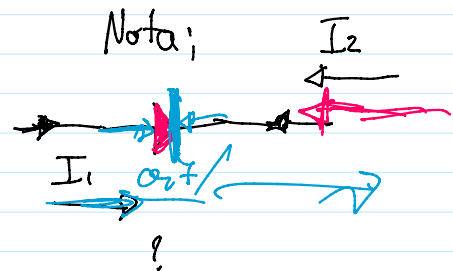


$I_1?$

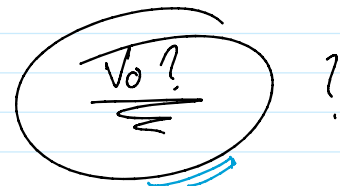
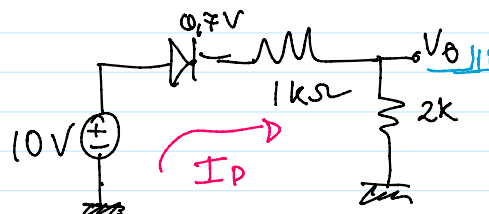
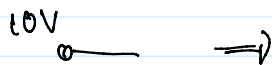
$I_1?$

$$V = IR$$

$$I = \frac{V}{R} = \frac{10V}{10\Omega} = 1A$$



$$R // R = \frac{R}{2} \quad 2k\Omega // 2k\Omega = 1k\Omega$$



$$-10 + 0,7 + I_D \cdot 1k + I_D \cdot 2k = 0$$

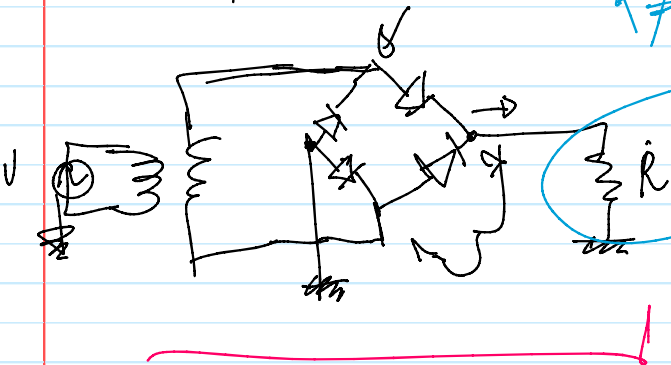
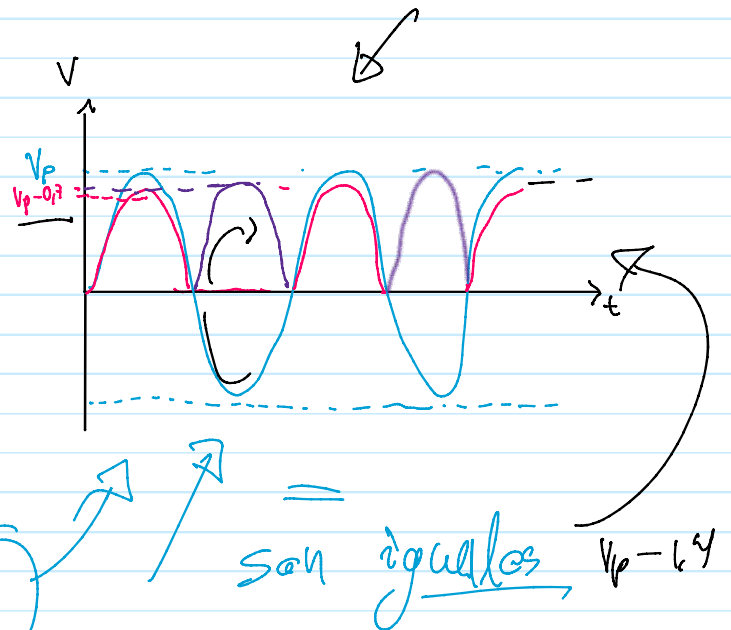
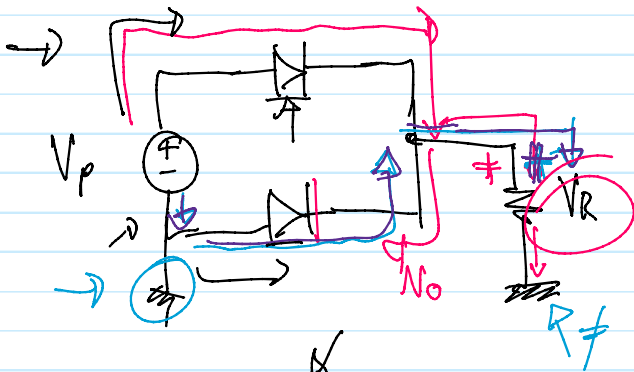
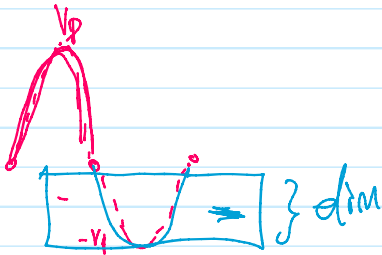
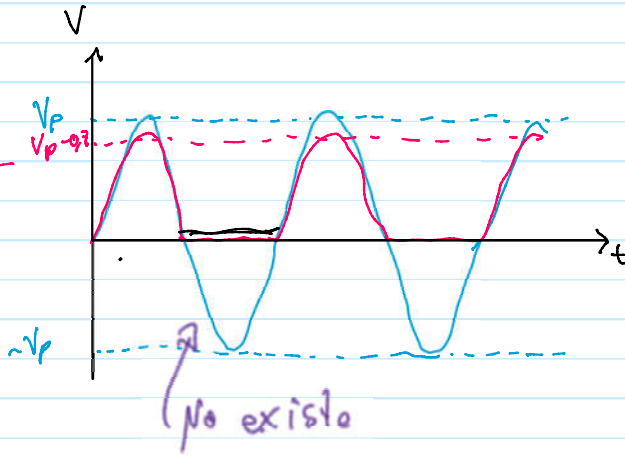
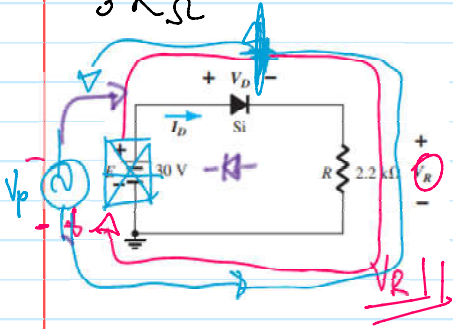
$$10 - 0,7 = I_D (1k + 2k)$$

$$\frac{9,3V}{3k} = I_D = 3,1mA$$

$$V_o = 3,1mA \cdot 2k$$

$$V_o = 6,2V$$

$$\frac{9.3V}{3k\Omega} = I_D = 3.1mA$$



AC.

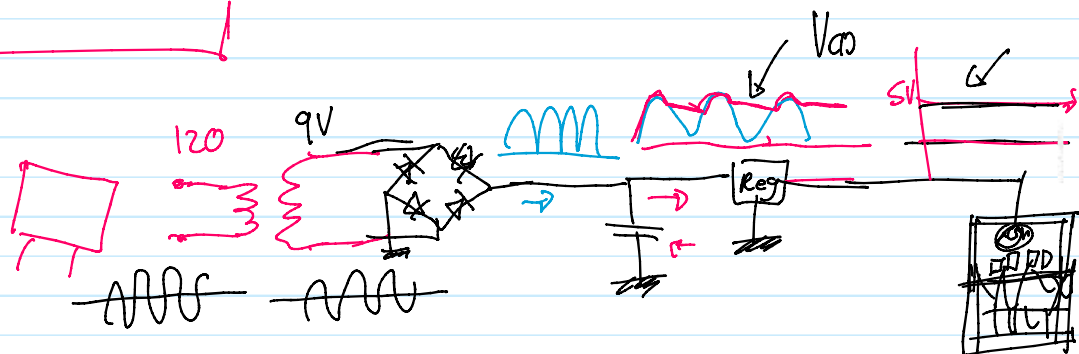
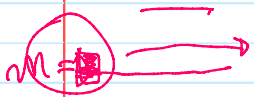


Tabla resumen 4.2 Rectificadores con filtro condensador a la entrada*

	Media onda	Onda completa	En puente
Número de diodos	1	2	4
Entrada del rectificador	$V_{p(2)}$	$0,5V_{p(2)}$	$V_{p(2)}$
Salida de continua (ideal)	$V_{p(2)}$	$0,5V_{p(2)}$	$V_{p(2)}$
Salida de continua (2ª aproximación)	$V_{p(2)} - 0,7 V$	$0,5V_{p(2)} - 0,7 V$	$V_{p(2)} - 1,4 V$
Frecuencia de rizado	f_{in}	$2 f_{in}$	$2 f_{in}$
PIV	$2 V_{p(2)}$	$V_{p(2)}$	$V_{p(2)}$
Corriente de diodo	I_{dc}	$0,5 I_{dc}$	$0,5 I_{dc}$

$$V_R = \frac{I_{dc}}{fC}$$

f Hz

$$I_{dc} = \frac{V_{cp}}{R}$$

V_R

$$C = 100 \mu F$$

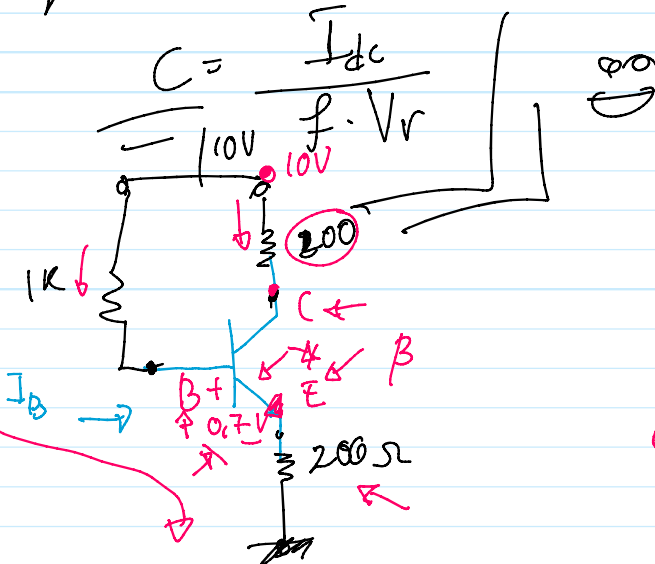
60 Hz

7 A

$$V_R = \frac{7 \mu A}{100 \mu F \cdot 60 Hz} = 1,16 mV$$

$$= 1,16 mV$$

C = ?



B: base
C: Colector

E: Emisor

$$I_B \ll I_E, I_C$$

$$I_E \approx I_C$$

$$\beta = 100$$

$$I_E = (\beta + 1) I_B$$

$$I_E = 101 \cdot I_B$$

Halla B

$$10V = I_B \cdot 1k + 0,7 + I_E \cdot 200$$

$$10 - 0,7 = I_B \cdot 1k + I_E \cdot 200$$

$$10 - 0.7 = I_B \cdot 1k + I_E \cdot 200$$

$$\uparrow \quad \uparrow$$

$$9.3 = I_B \cdot 1k + 101 \cdot I_B \cdot 200$$

$$9.3 = I_B (1k + 101 \cdot 200)$$

$$\frac{9.3}{21.2k} = I_B = \underline{438.168 \mu A}$$

$$I_E = 101 \cdot I_B$$

$$I_E = \underline{44.31 mA}$$

$$I_C = \beta \cdot I_B$$

$$I_C = 100 \cdot I_B$$

$$I_C = \underline{43.86 mA}$$

$$V_C = ?$$

$$V_C = 10 - V_{RC}$$

$$V_C = 10 - I_C \cdot R_C$$

$$V_C = 10 - 43.86 mA \cdot 200$$

$$V_C = \underline{1.228 V}$$

$$V_B = 10 - V_{RB}$$

$$V_B = 10 - I_B \cdot R_B$$

$$V_B = 10 - 438.168 \mu A \cdot 1k$$

$$V_B = \underline{9.56 V}$$

$$V_E = ?$$

$$V_{BE} = V_B - V_E$$

$$V_E \rightarrow$$

$$V_E = V_B - V_{BE}$$

$$V_E = 9.56 - 0.7$$

$$V_E = \underline{8.86 V}$$