



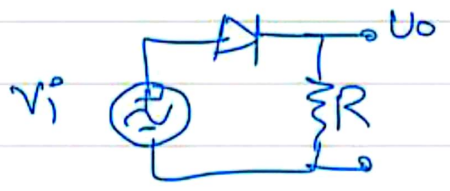
لاب الكترو (حاسوب)

م.حطاب

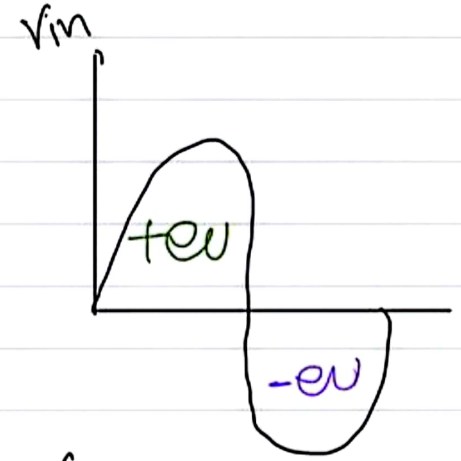
للطالبة المبدعة
آية أمجد العبسي

إرادة - ثقة - تغيير

Ex (1+2) H-W rectifier :-



$v_i = V_p \sin \omega t$



+eV (diode is on)
 +eV (positive half cycle)

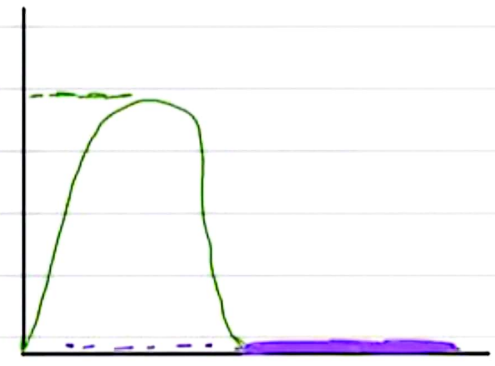
$v_o = V_p - V_s$

$v_o = V_p - V_s$

-eV (negative half cycle)
 -eV diode is off

$v_o = \text{zero}$

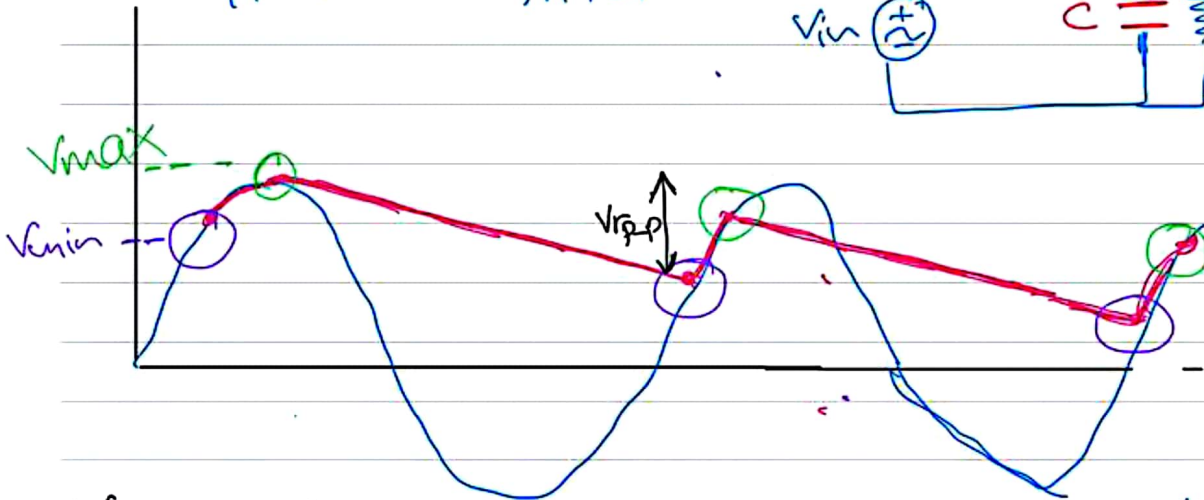
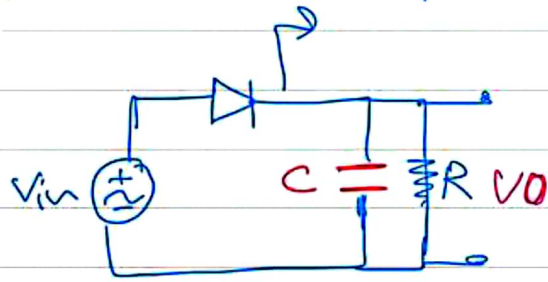
$v_o = \text{zero}$



$$V_{avg} = V_{DC} = \frac{V_p - V_s}{\pi}$$

low pass filter

H.W with filter



$$V_{\text{ripple}} = V_{\text{max}} - V_{\text{min}} \quad (\text{P-P})$$

$$V_{\text{Avg}} = V_m - \frac{V_{\text{r.p.p}}}{2}$$

V_{in} : (المدخل)
 V_{O} : (المخرج)

$$\text{Ripple factor} = \frac{V_{\text{r.p.p}}}{V_{\text{Avg}}}$$

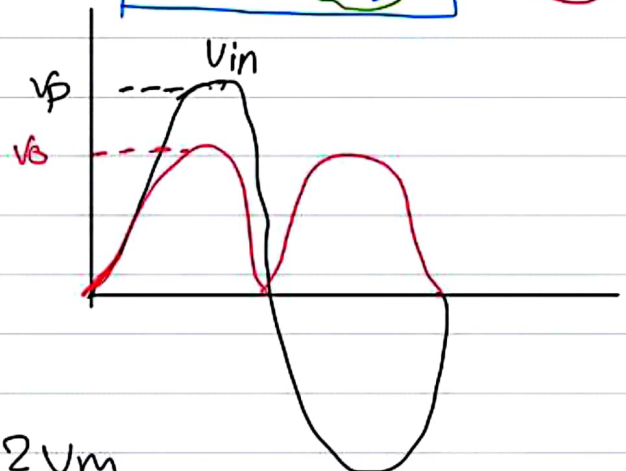
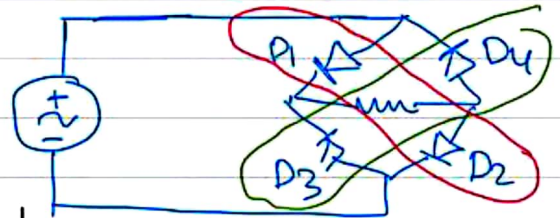
F.W rectifier :

at +ve cycle
 D_1 and D_2

at -ve cycle
 D_3 and D_4

$$V_o = V_p - 2V_s$$

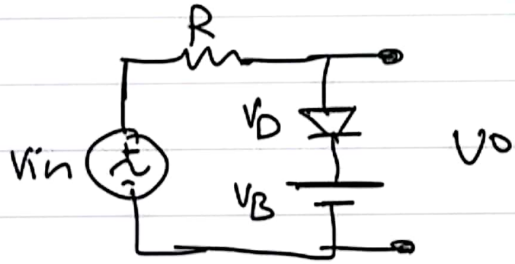
$$V_{\text{Avg}} = \frac{2(V_p - 2V_s)}{\pi} = \frac{2V_m}{\pi}$$



Comparison of H.W and F.W

	H.W (one diode)	F.W (4 diodes) bridge
$V_{DC} (V_{Avg})$	$\frac{V_m}{\pi} = \frac{V_p - V_s}{\pi}$	$\frac{2V_m}{\pi} = \frac{2(V_p - 2V_s)}{\pi}$
$V_{DC} \text{ with } C$	$V_m - \frac{V_r (p-p)}{2}$	$V_m - \frac{V_r (p-p)}{2}$
$V_r (p-p)$	$\frac{V_m}{FRC}$	$\frac{V_m}{2FRC}$
f_o	f_{in}	$2f_{in}$
Ripple Factor	$\frac{V_r (rms)}{V_{DC}}$	$\frac{V_r (rms)}{V_{DC}}$
PIU	V_m	V_m

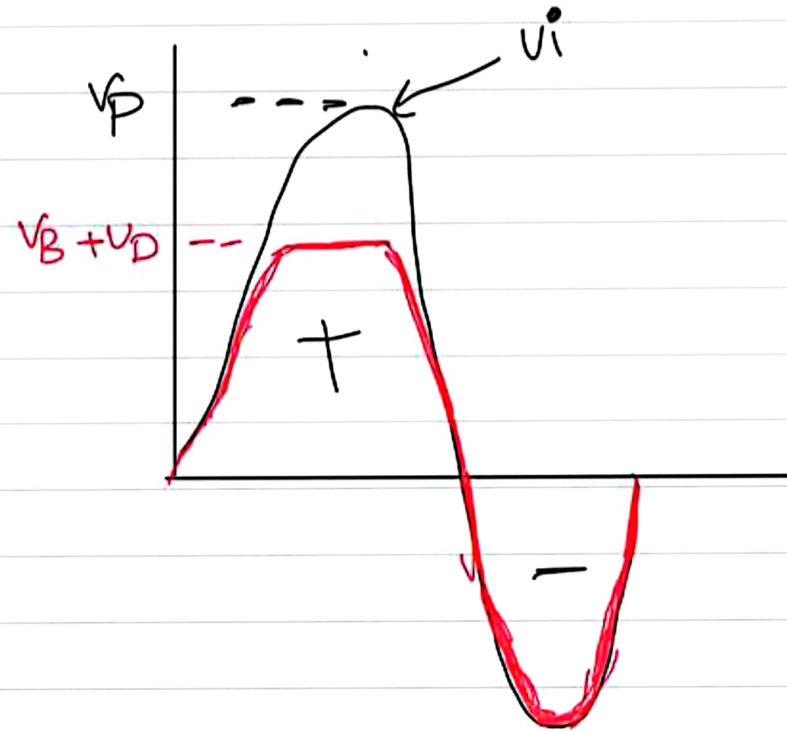
Ex(3+4) : clipper :-



$$v_{in} = v_p \sin(\omega t)$$

+ve v_B D is on
 $v_o = v_B + v_p$

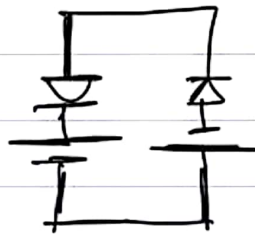
-ve v_B D is off
 $v_o = v_p$



\Rightarrow القصر للوجبة (+)

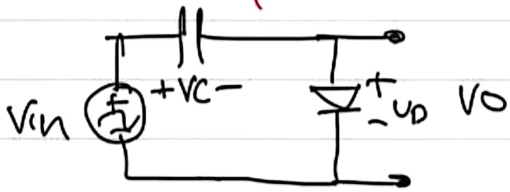


\Rightarrow القصر للوجبة (-)



\Rightarrow القصر للوجبة (+) و (-)

Clamper Ⓢ



$$v_{in} = v_p \sin \omega t$$

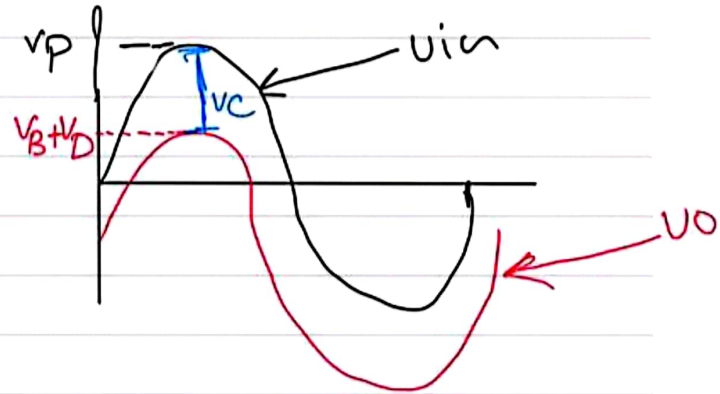
$$-v_p + v_c + v_D + v_B = 0$$

$$v_c = v_p - (v_D + v_B)$$

ارتجابه حركة الموجة مع انعكاسه البرود

$\Delta \Rightarrow$ لن يسفل

$\Delta \Rightarrow$ لن يسفل



كأن ال v_{p-p} تفصل ثابتة وماتغير

EX (5) : Transistor

$$* \textcircled{*} I_B \Rightarrow -v_{BB} + R_B(I_B) + v_{BE} + R_E I_E = 0$$

$$* \textcircled{*} U_{CE} \Rightarrow v_{CC} + R_C I_C + U_{CE} + R_E I_E = 0$$

$$* \textcircled{*} I_C = I_B \beta$$

$$* \textcircled{*} I_E = (1 + \beta) I_B$$

$$* \textcircled{*} \alpha = \frac{\beta}{\beta + 1}$$

