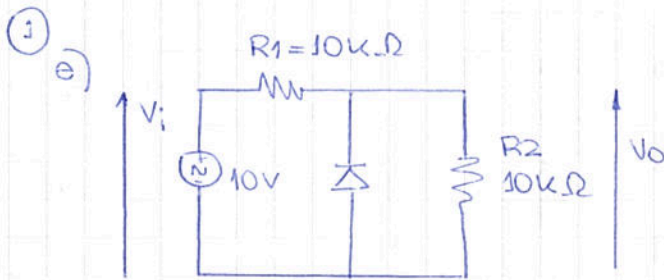
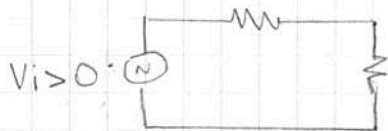


TP 5 : DIODOS



Semi ciclo positivo → D inversa



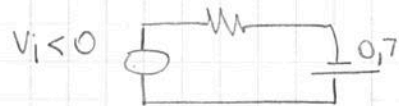
$$V_o = V_i \frac{R_2}{R_1 + R_2}$$

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

Semi ciclo negativo → D directa



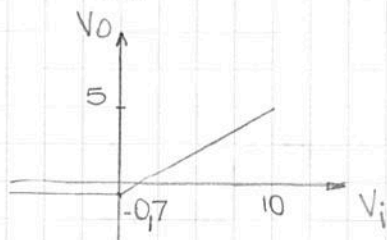
$$V_o = 0$$



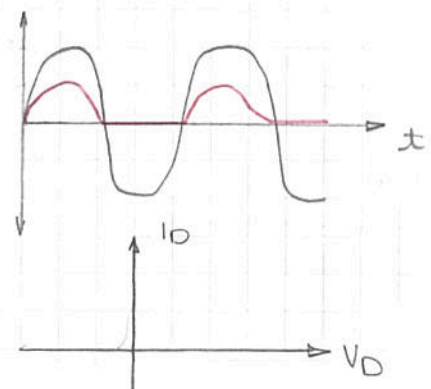
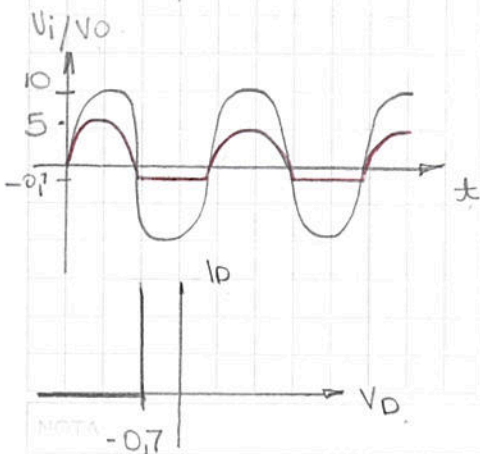
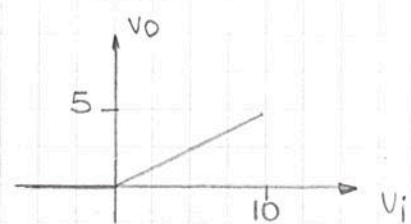
$$V_o = -0,7V$$

(Si en vez de cable es fuente)

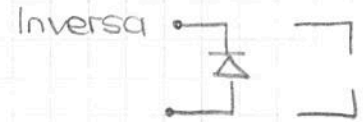
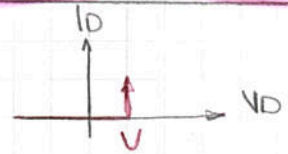
Fuente



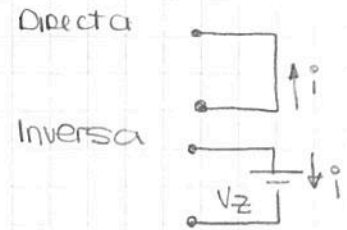
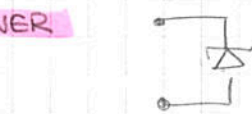
Cable

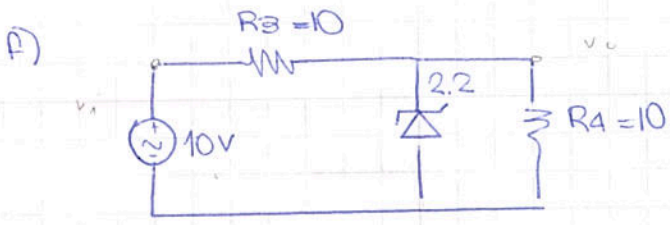


COMÚN



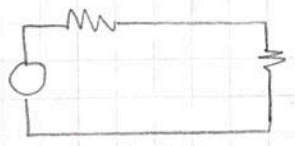
ZENER





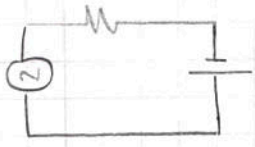
Semiacido pos. → D'inver. hasta 2.2

$$V_0 = \frac{V_i}{2}$$



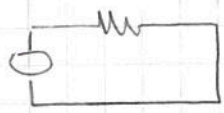
Cuando  $V_i \geq 4,4$ ,  $V_0 = 2,2$

$$V_0 = 2,2$$

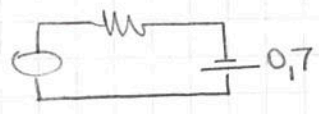


Semiacido negativo

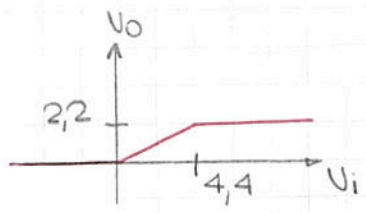
$$V_0 = 0 \text{ (cable)}$$



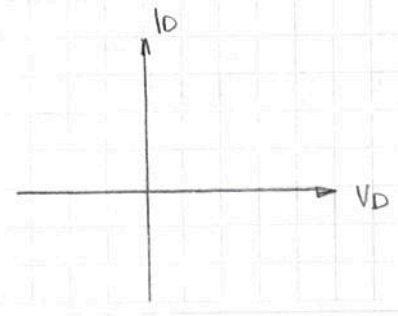
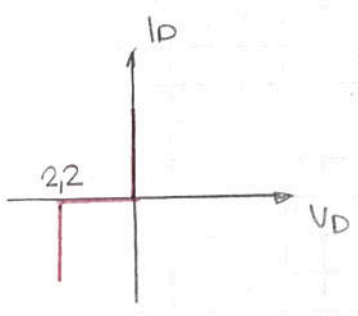
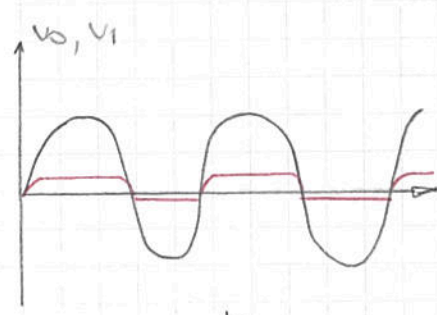
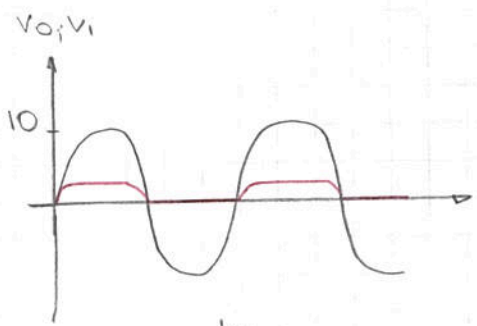
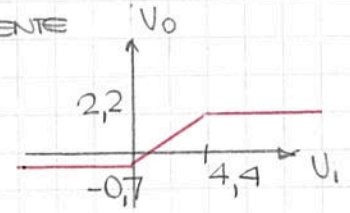
$$V_0 = -0,7 \text{ (fuente)}$$

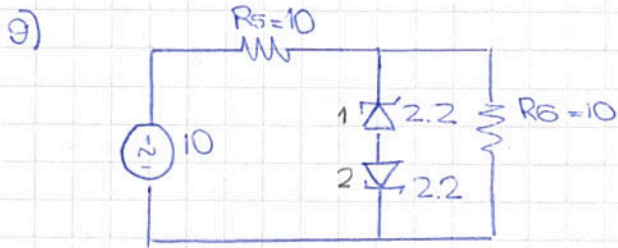


CABLE

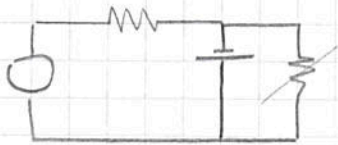


FUENTE





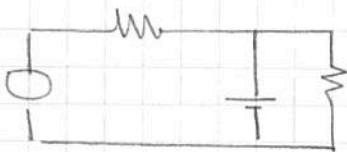
Sem (+) → D1 inv, D2 dir



$$V_o = \frac{V_i}{2} \quad \text{xa } V_i < 4,4$$

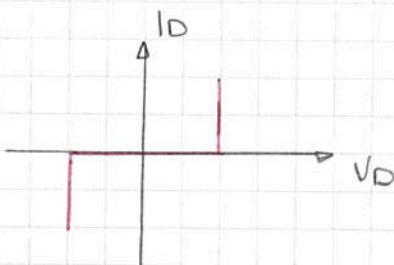
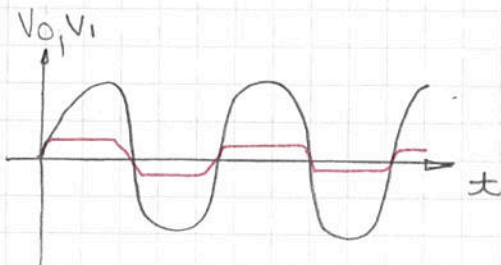
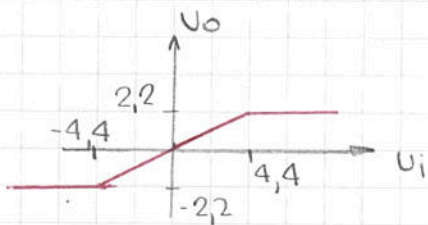
$$V_o = 2,2 \quad \text{xa } V_i \geq 4,4$$

Sem (-) → D1 dir, D2 inv

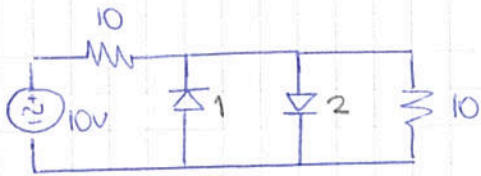


$$V_o = \frac{V_i}{2} \quad V_i < 4,4$$

$$V_o = -2,2 \quad V_i \geq 4,4$$



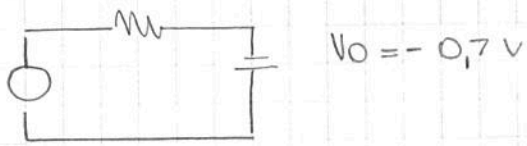
h)



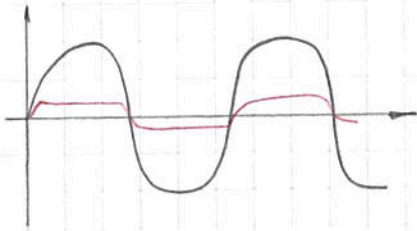
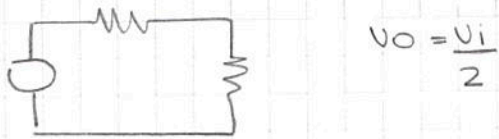
Sem  $\oplus$   $\rightarrow$  D1 inv, D2 dir

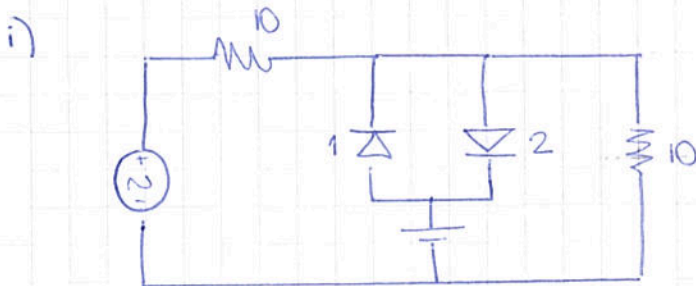


Sem  $\ominus$   $\rightarrow$  D1 dir, D2 inv

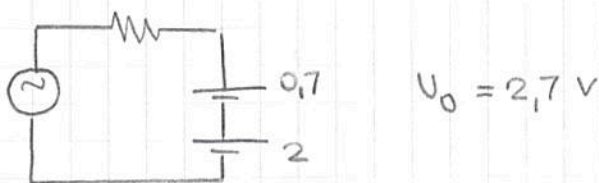


D1 inv, D2 inv

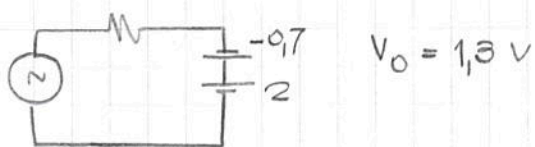




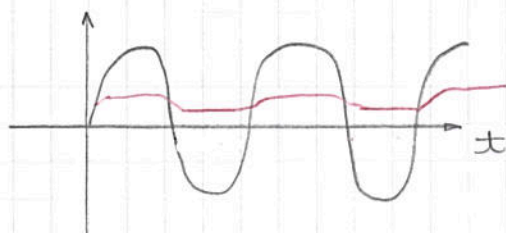
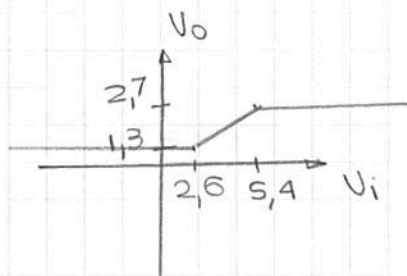
• D1 inv ; D2 dir



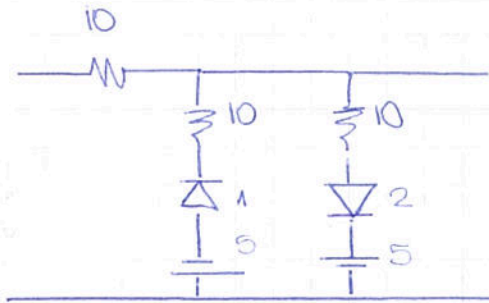
• D1 dir, D2 inv



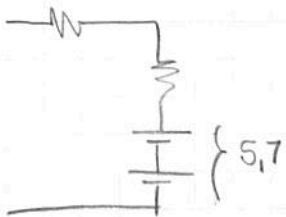
• D1 inv, D2 inv



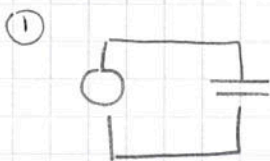
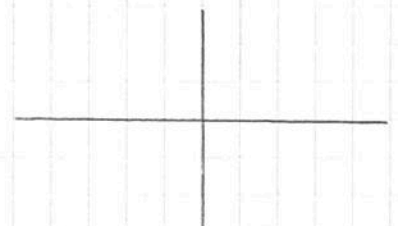
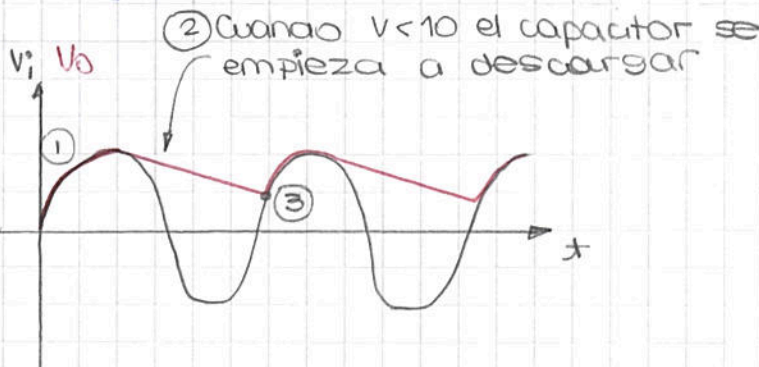
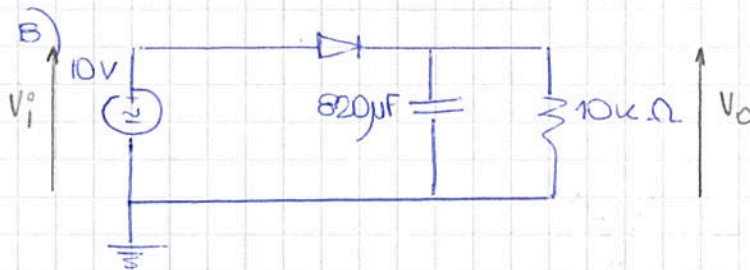
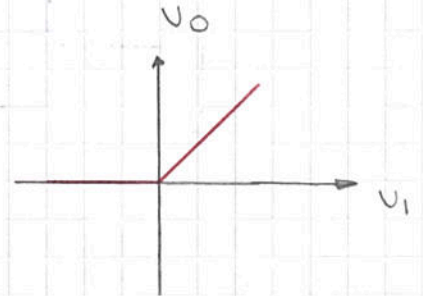
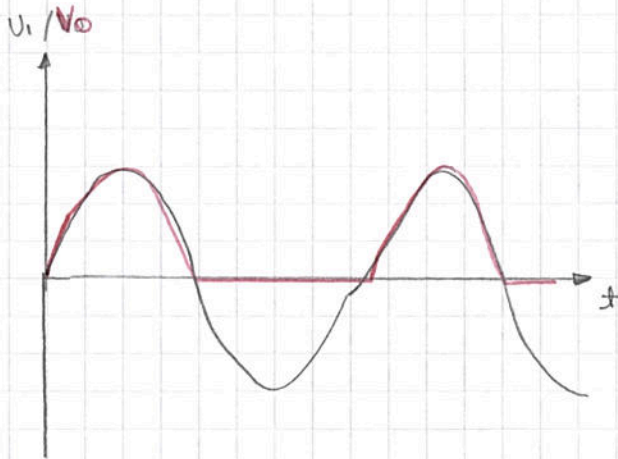
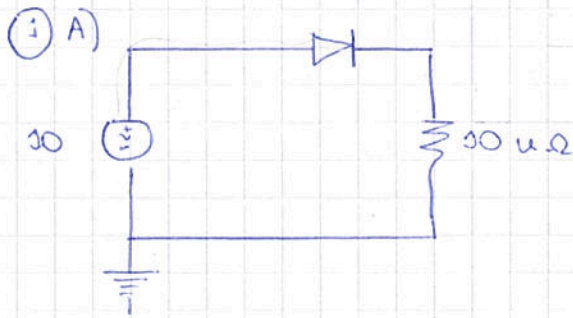
②



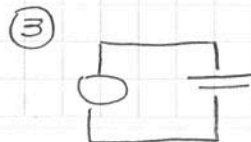
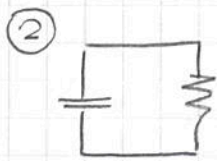
• D1 inv, D2 dir



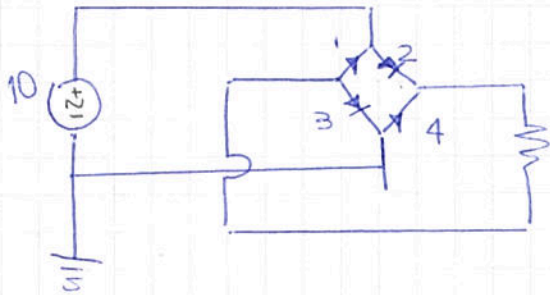
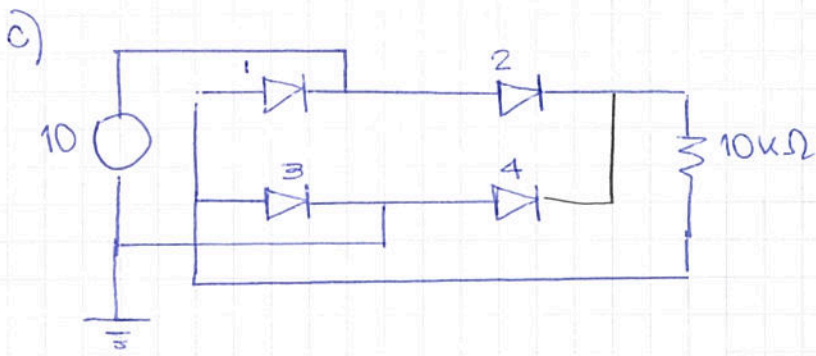
$$U_i + iR = U_0 = iR - 5,7$$



Se carga el capacitor hasta  $V=10$

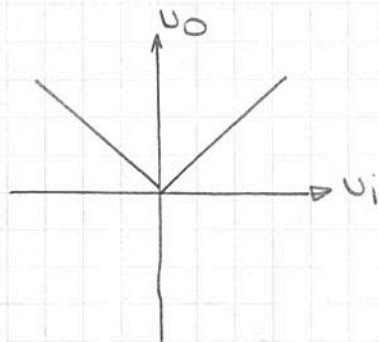
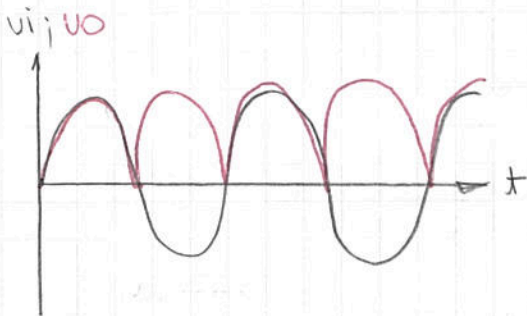
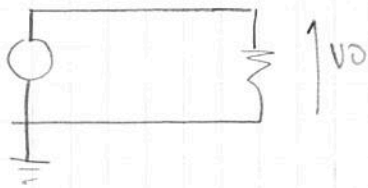


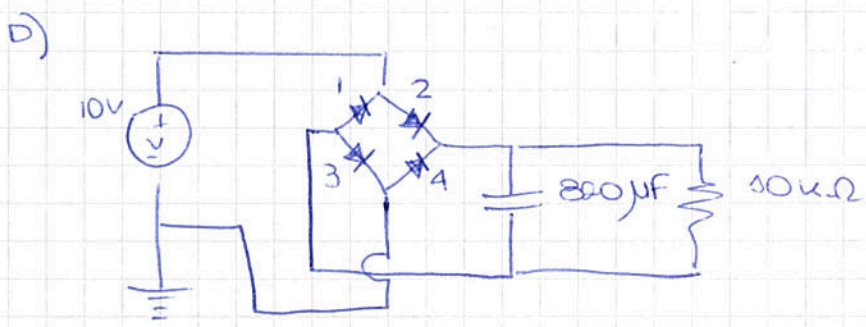
Hasta que  $V_f > V_{\text{capacitor}}$  y se empieza a cargar otra vez



$V_i \oplus$   
 D2 y D3 directos  
 D1 y D4 INV

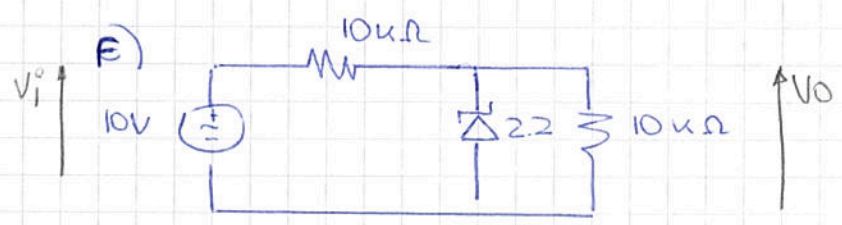
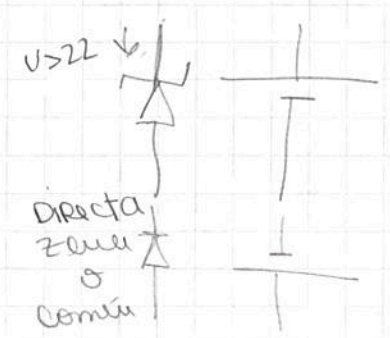
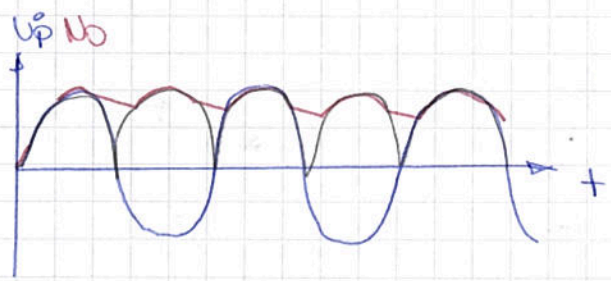
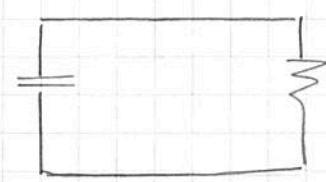
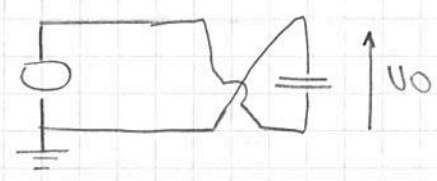
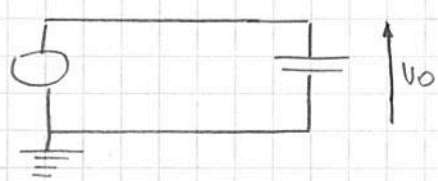
$V_i \ominus$   
 D1 y D4 dir  
 D2 y D3 inv





D2 y D3 dir  
 $V_i (+)$  hasta 10V

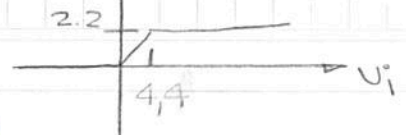
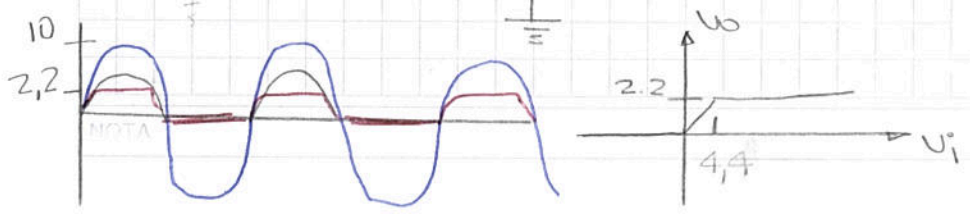
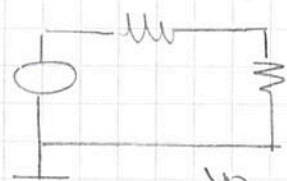
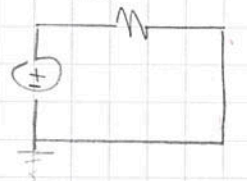
D1 y D4 dir  
 $V_i (-)$

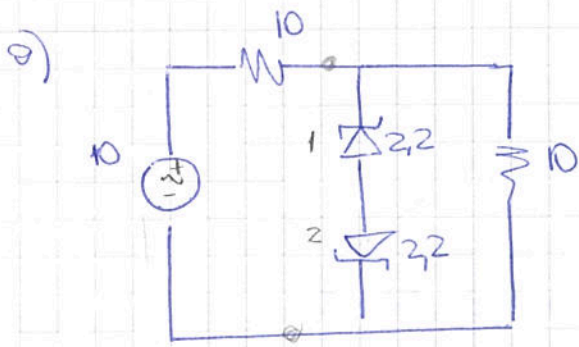


Diodo directo  
 $V_i (-)$

$V_i (+)$   
 Diodo inverso  
 $V_i < 2.2$

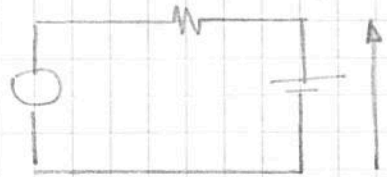
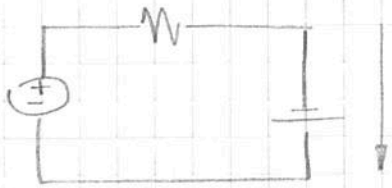
$V_i (+)$   
 Diodo inverso  
 $V_i \geq 2.2$



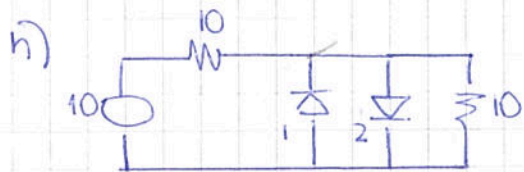
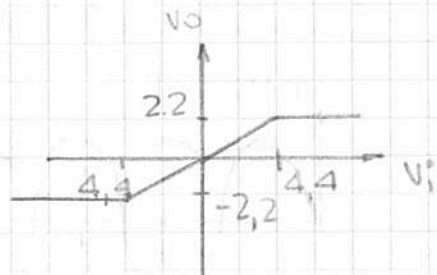
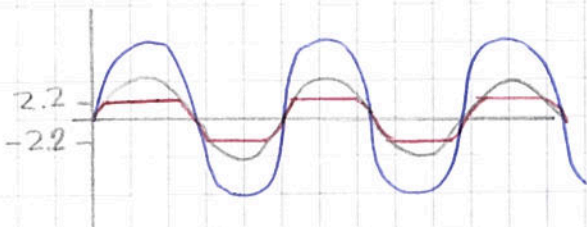
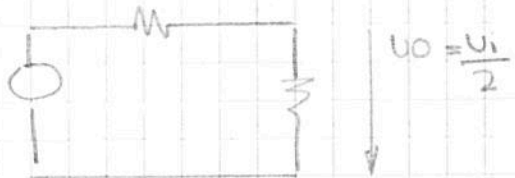


$D1$  dir,  $D2$  inv  $> 2,2$   
 $V_i (-)$

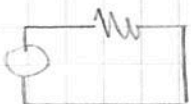
$D1$  inv  $> 2,2$  y  $D2$  dir  
 $V_i (+)$



$D2 < 2,2$



$V_i (+)$   $D2$  dir  $D1$  inv



$V_i (-)$   $D1$  dir,  $D2$  inv

TP 8: SIMPLIFICACIÓN DE FUNCIONES  
BOOLEANAS CON COND. SIN IMPORTANCIA

NOMBRE

FECHA

①

A)

		A		B			
		00	01	11	10		
C	D	1	0	X	1		
	00	0	X	X	1		
01	D	1	X	X	0		
	10	0	0	X	1		

Annotations:  $\bar{B}\bar{C}\bar{D}$ ,  $A\bar{C}$ ,  $\bar{A}CD$ ,  $A\bar{D}$

$$F = \bar{A}\bar{C} + \bar{B}\bar{C}\bar{D} + \bar{A}CD + A\bar{D}$$

B)

		A		B			
		00	01	11	10		
C	D	1	1	1	X		
	00	X	X	X	0		
01	D	1	1	1	0		
	10	1	0	0	X		

Annotations:  $\bar{C}\bar{D}$ ,  $\bar{C}D$ ,  $\bar{A}\bar{B}$ ,  $BD$ ,  $B\bar{C}\bar{D}$

$$F = \bar{A}\bar{B} + \bar{C}\bar{D} + BD \quad (\text{Mim})$$

$$F = (\bar{C} + D)(\bar{B} + C + \bar{D})(A + \bar{B}) \quad (\text{Maxi})$$

↳ Maq

$$F = (C + \bar{D})(\bar{B} + \bar{C} + D)(\bar{A} + B) \quad (\text{Maxi})$$

C)

		A		B			
		00	01	10	11		
C	D	1	1	X	1		
	00	X	X	1	1		
01	D	X	X	1	X		
	11	1	1	X	X		

$$F = 1$$

(2) A)  $W = \sum_m (0, 1, 5, 9, 10, 12, 13, 15)$

$R = \sum_m (2, 4, 6, 14)$

	A		B	
C	0	1	2	3
D	4	5	6	7
	8	9	10	11
	12	13	14	15
$\bar{A}\bar{C}$	1	X	1	0
$\bar{C}\bar{D}$	1	1	1	1
	0	0	1	0
	X	X	X	1

$F = AB + C\bar{D} + \bar{C}\bar{D} + \bar{A}\bar{C}$

B)  $Y = \sum_m (2, 3, 4, 7, 9, 11, 15)$

$R = \sum_m (0, 1, 5, 10, 12)$

	A		B	
C	0	1	2	3
D	4	5	6	7
	8	9	10	11
	12	13	14	15
$\bar{A}\bar{C}\bar{D}$	X	1	X	0
$\bar{C}\bar{D}$	X	X	0	1
$\bar{C}\bar{D}$	1	1	1	1
$\bar{A}\bar{B}$	1	0	0	X

$Y = \bar{A}\bar{C}\bar{D} + \bar{B}\bar{D} + C\bar{D} + \bar{A}\bar{B}$

(3) G3

	A		B	
C	0	1	2	3
D	4	5	6	7
	8	9	10	11
	12	13	14	15
A	0	0	X	1
	0	0	X	1
	0	0	X	X
	0	0	X	X

G2

	A+B		B	
C	0	1	2	3
D	4	5	6	7
	8	9	10	11
	12	13	14	15
A+B	1	X	1	1
	1	X	1	1
	1	X	X	X
	1	X	X	X

G1

	B		C	
C	0	1	2	3
D	4	5	6	7
	8	9	10	11
	12	13	14	15
$\bar{B} + \bar{C}$	1	X	0	0
$B + C$	1	X	1	1
$B + C$	1	0	X	X
$\bar{B}\bar{C}$	1	0	X	X

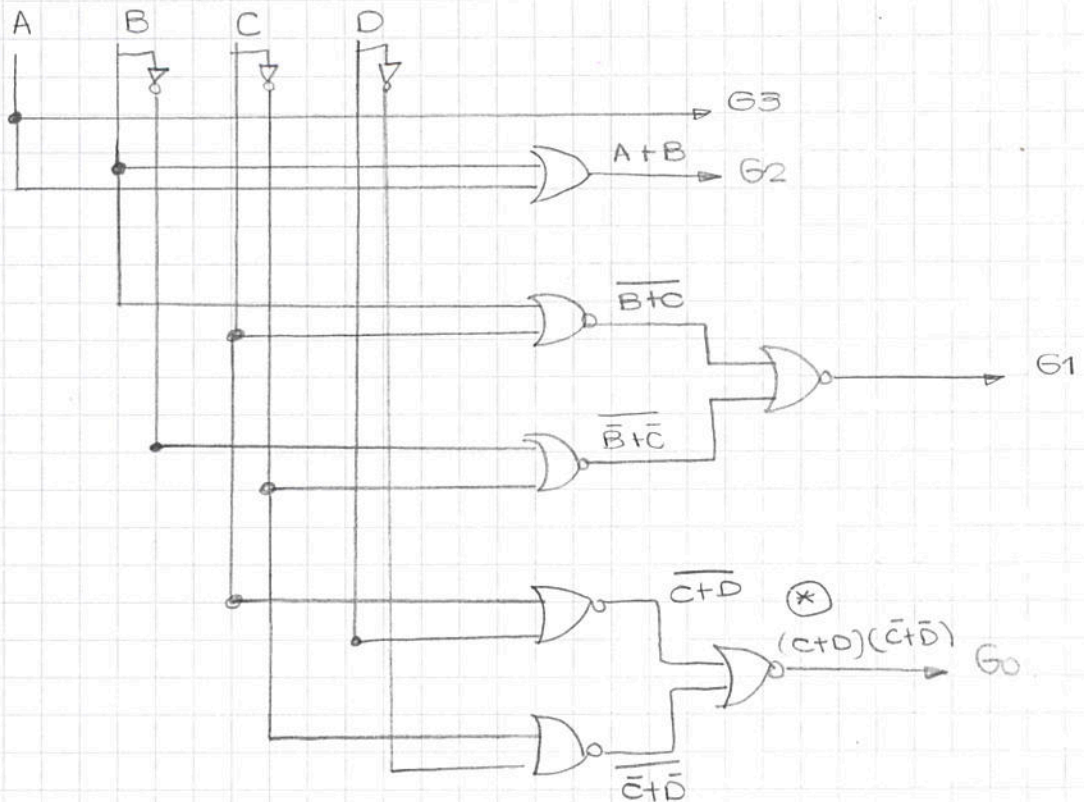
G0

	C+D		C	
C	0	0	X	0
D	1	1	X	1
	0	0	X	X
	1	1	X	X

$G3 = A$   
 $G2 = A+B$   
 $G1 = (B+C)(\bar{B}+\bar{C})$   
 $G0 = (C+D)(\bar{C}+\bar{D})$

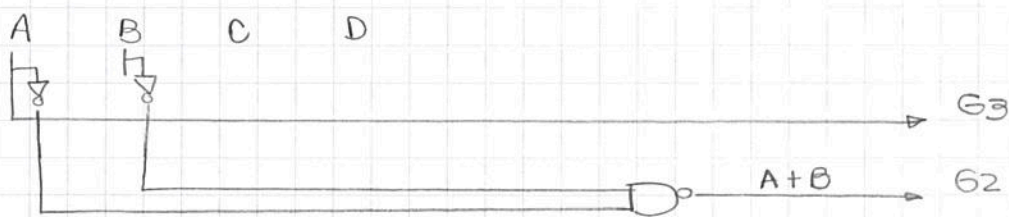
$G3 = A$   
 $G2 = A+B$   
 $G1 = B + \bar{B}\bar{C}$   
 $G0 = \bar{C}\bar{D} + C\bar{D}$

CON COMPUERTAS OR-NOR USO MAXI



(\*)  $\overline{\overline{C+D} + \overline{\overline{C+D}}} = (C+D)(\overline{C+D})$

CON COMPUERTAS NAND E INV → MINITERMINOS



$\overline{\overline{A \cdot B}} = A \cdot B$

$\overline{B+C}$

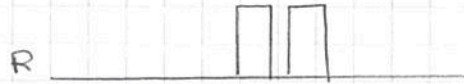
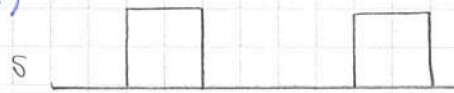
$\overline{B+C} = \overline{B} \cdot \overline{C}$

$= \overline{B+C}$



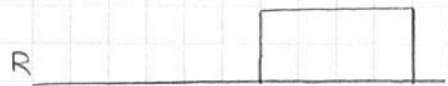
1

A)

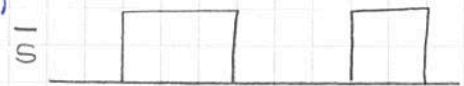


S	R	$Q_{n+1}$
0	0	$Q_n$
0	1	0
1	0	1
1	1	0

B)



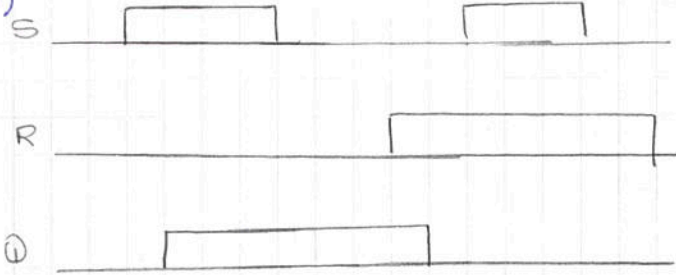
C)



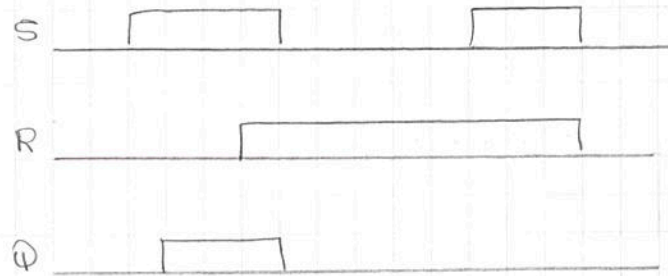
S1	R1	$Q_n$	$Q_{n+1}$
0	0	0	0
0	1	1	0
1	0	0	1
1	1	$Q_{n-1}$	$Q_{n-1}$

②

A)



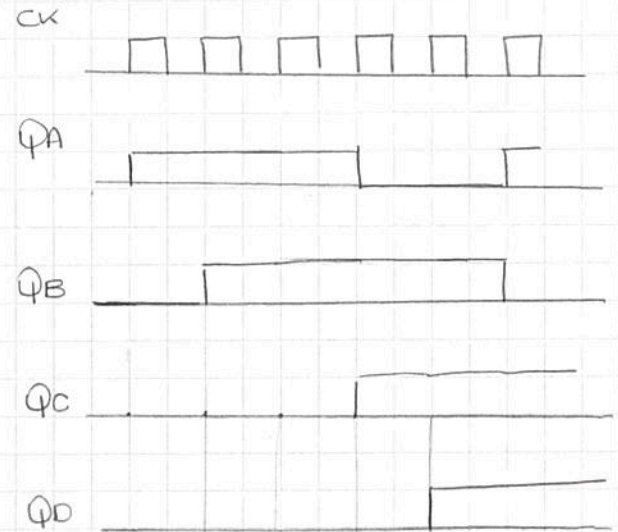
B)



④

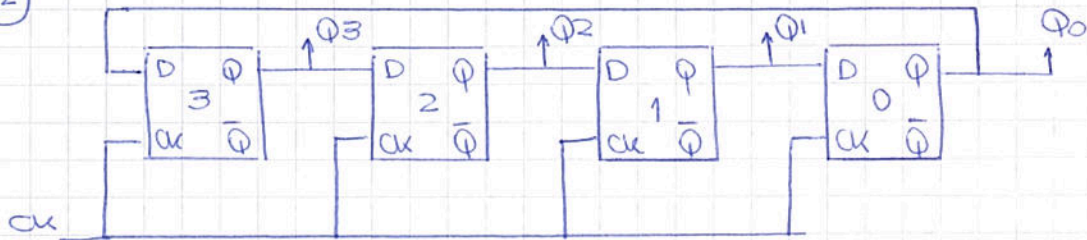
1

ENT	CK	QA	QB	QC	QD
		0	0	0	0
1	1	1	0	0	0
1	2	1	1	0	0
1	3	1	1	1	0
0	4	0	1	1	1
1	5	1	0	1	1



CONTADOR DE ANILLO

2

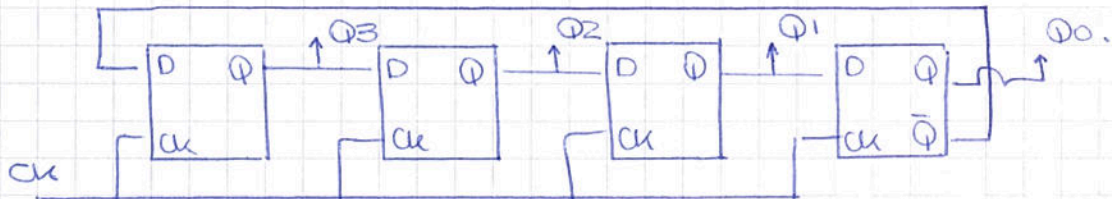


Q3	Q2	Q1	Q0
1	0	0	0
0	1	0	0
0	0	1	0
0	0	0	1

MÓDULO 4

3

CONTADOR DE JOHNSON O MOEBIUS



Q3	Q2	Q1	Q0
0	0	0	0
1	0	0	0
1	1	0	0
1	1	1	0

MÓDULO 8

NOTA

1	1	1	1
0	1	1	1
0	0	1	1
			0 0 0 1

