

1.

a) Número máximo de salidas = 4 $\Rightarrow q_{110} = 1001_2$

b) Módulo 10 \Rightarrow 4 bitables salidas q_3, q_2, q_1, q_0 D_3, D_2, D_1, D_0

c) Número salidas = número bitables

Los tablas necesarias están proporcionados en SWAO.

q_3, q_2, q_1, q_0	$q_3^+, q_2^+, q_1^+, q_0^+$	D_3, D_2, D_1, D_0
0 0 0 0	1 0 0 1	1 0 0 1
0 0 0 1	0 0 0 0	0 0 0 0
0 0 1 0	0 0 0 1	0 0 0 1
0 0 1 1	0 0 1 0	0 0 1 0
0 1 0 0	0 0 1 1	0 0 1 1
0 1 0 1	0 1 0 0	0 1 0 0
0 1 1 0	0 1 0 1	0 1 0 1
0 1 1 1	0 1 1 0	0 1 1 0
1 0 0 0	0 1 1 1	0 1 1 1
1 0 0 1	1 0 0 0	1 0 0 0
1 0 1 0	- - - -	- - - -
1 0 1 1	- - - -	- - - -
1 1 0 0	- - - -	- - - -
1 1 0 1	- - - -	- - - -
1 1 1 0	- - - -	- - - -
1 1 1 1	- - - -	- - - -

$$D_3 = \sum_m (0, 9) + d(10-15)$$

$$D_2 = \sum_m (5, 6, 7, 8) + d(10-15)$$

$$D_1 = \sum_m (3, 4, 7, 8) + d(10-15)$$

$$D_0 = \sum_m (0, 2, 4, 6, 8) + d(10-15)$$

Minimizar

D_3

$a_3 a_2$ $a_1 a_0$	00	01	11	10
00	1	0	0	0
01	0	0	1	0
11	0	0	1	0
10	0	0	0	0

$$D_3 = \bar{a}_3 \bar{a}_2 \bar{a}_1 \bar{a}_0 + a_3 \cdot a_0$$

D_2

$a_3 a_2$ $a_1 a_0$	00	01	11	10
00	0	0	0	0
01	0	0	0	0
11	0	0	0	0
10	0	0	0	0

$$D_2 = a_2 a_0 + a_2 \cdot a_1 + a_3 \cdot a_0$$

D_1

$a_3 a_2$ $a_1 a_0$	00	01	11	10
00	0	0	0	0
01	0	0	0	0
11	0	0	0	0
10	0	0	0	0

$$D_1 = a_2 \bar{a}_1 \bar{a}_0 + a_1 a_0 + a_3 \bar{a}_0$$

D_0

$a_3 a_2$ $a_1 a_0$	00	01	11	10
00	0	0	0	0
01	0	0	0	0
11	0	0	0	0
10	0	0	0	0

$$D_0 = \bar{a}_0$$

Ahora diseña el circuito en logic works