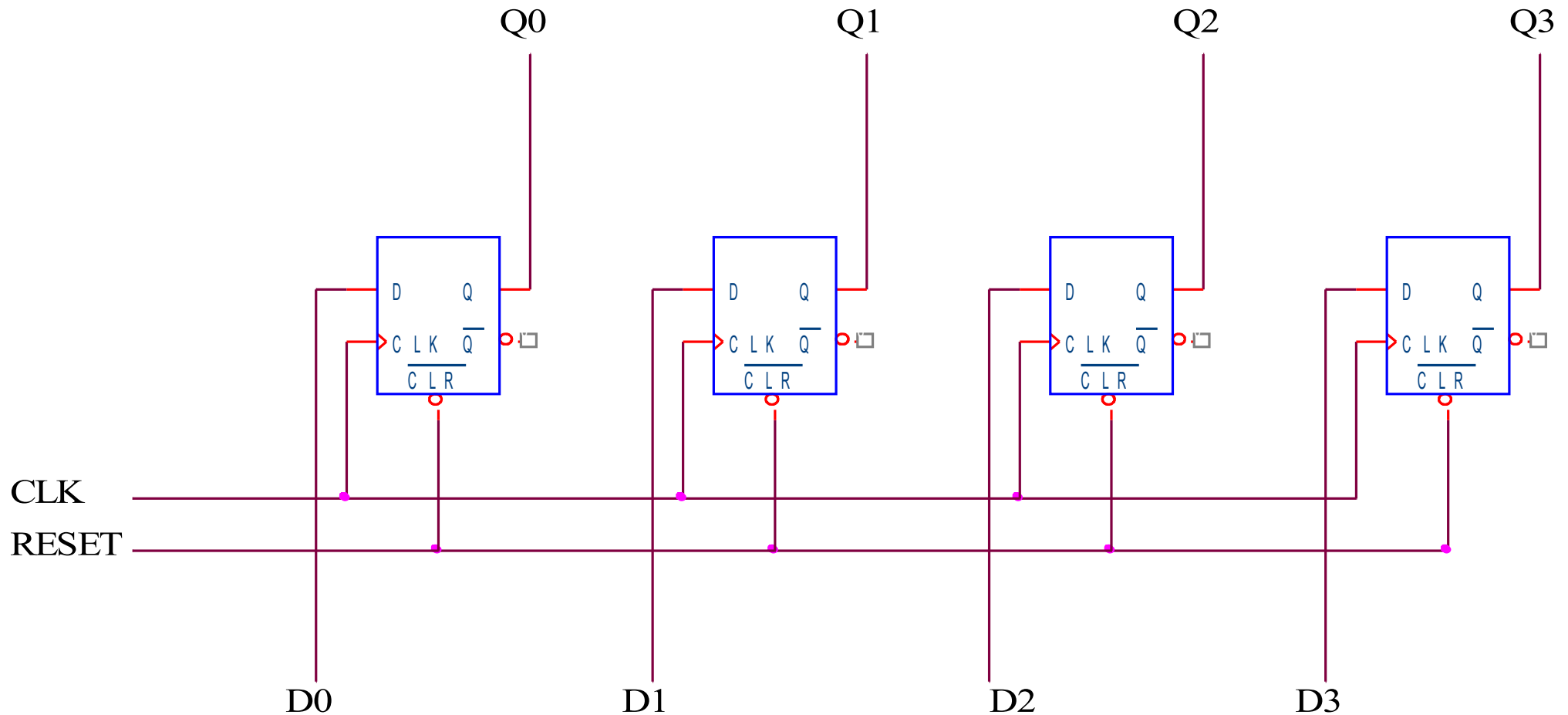
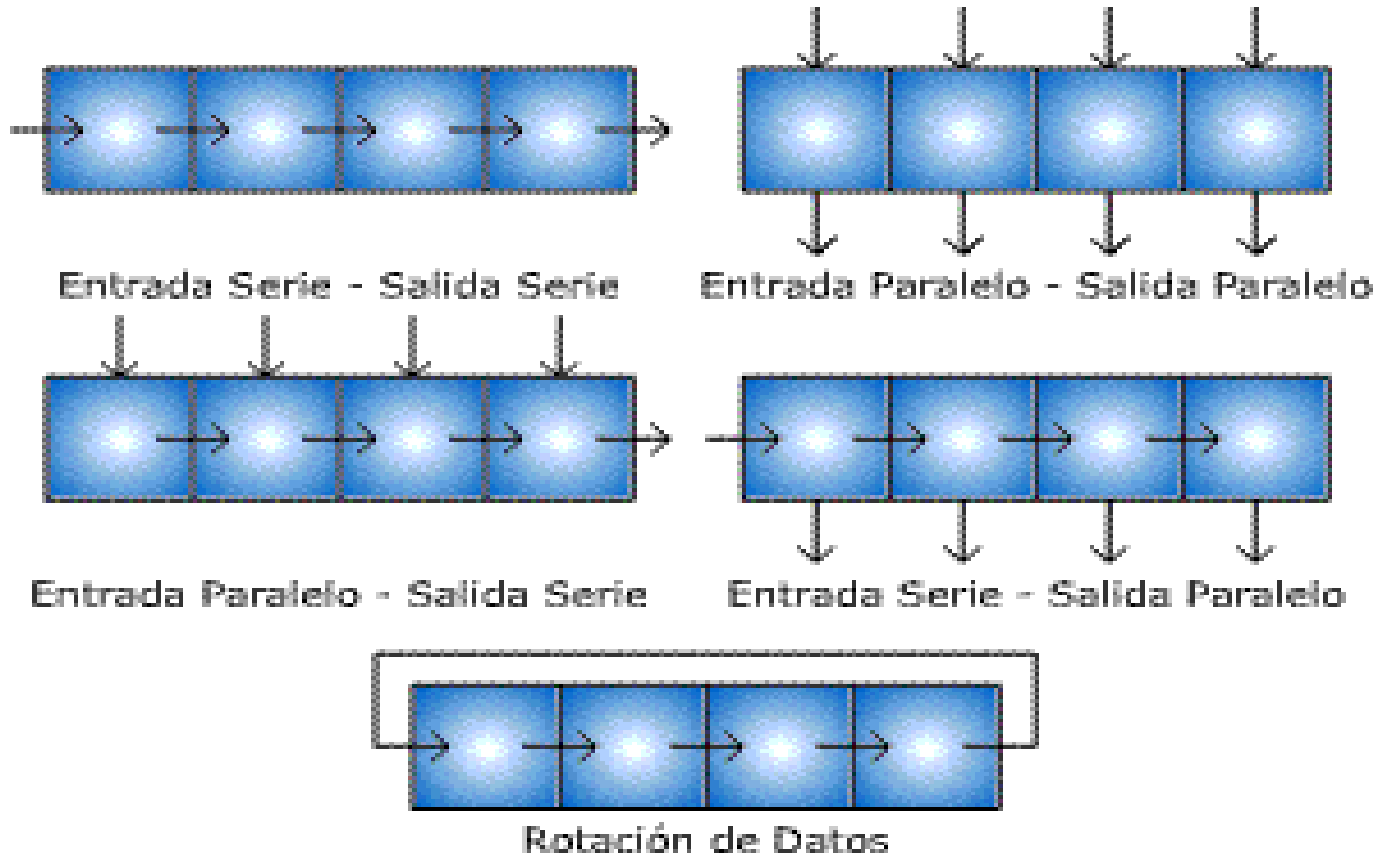


Registro de almacenamiento

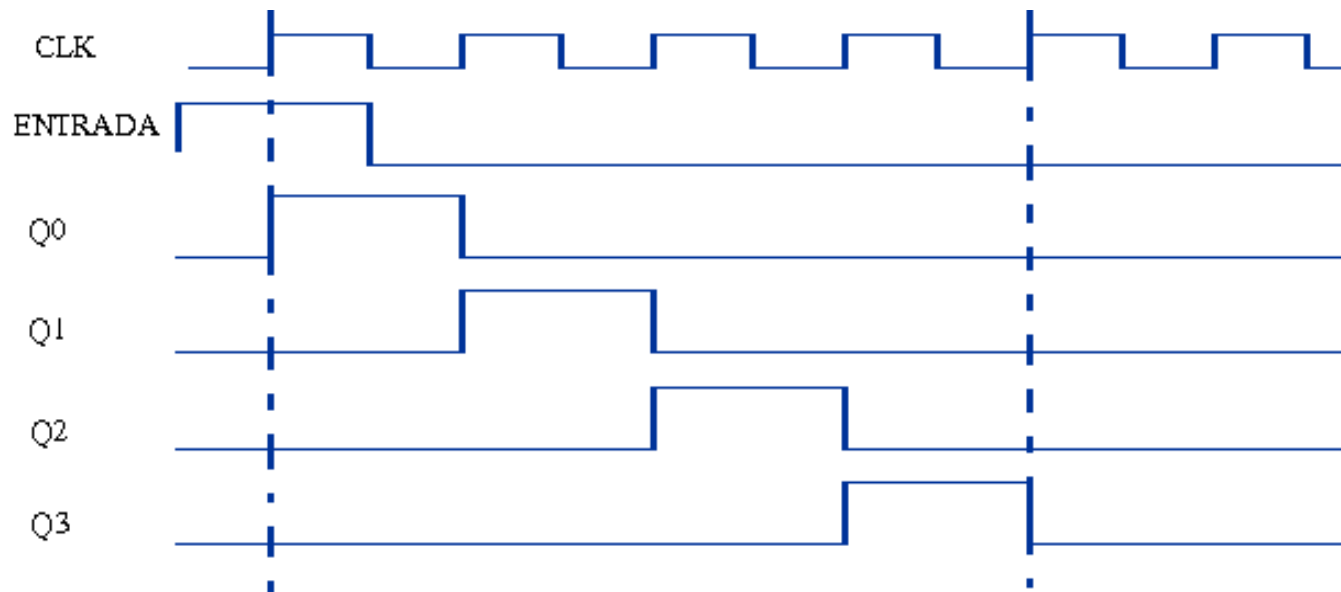
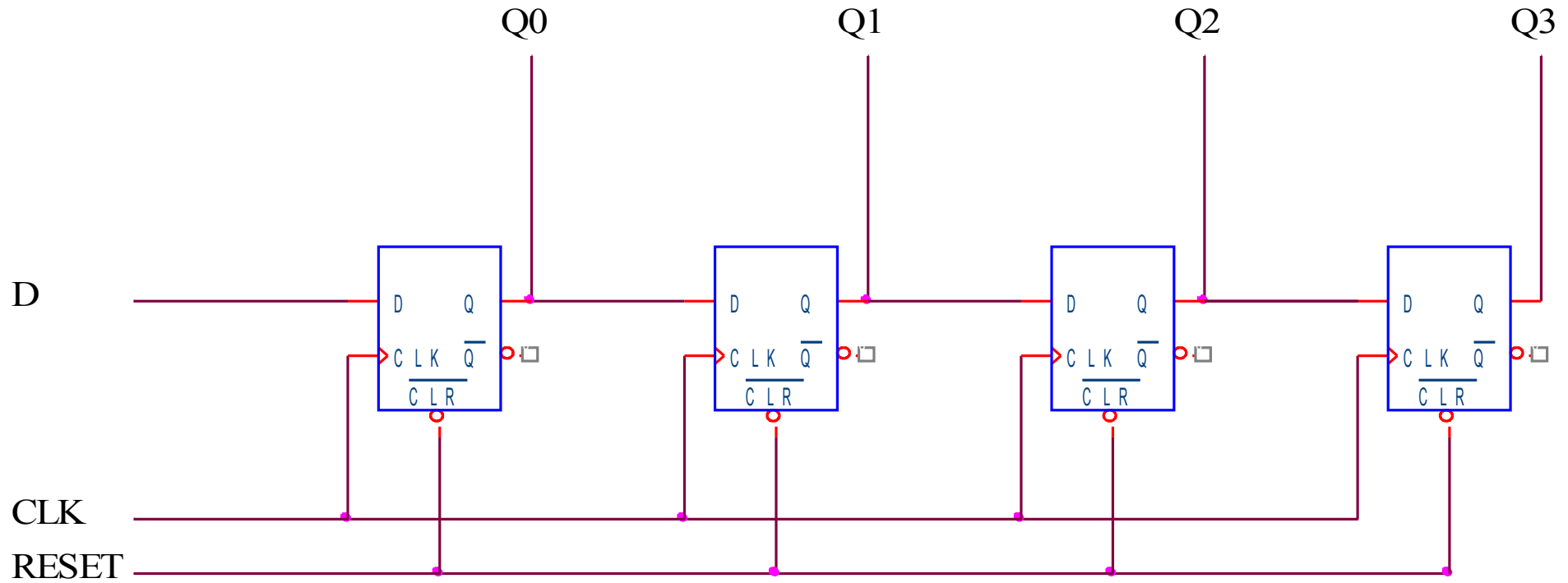


- Almacenamiento de datos (4 bits)
- En flanco de subida el dato de entrada pasa a la salida

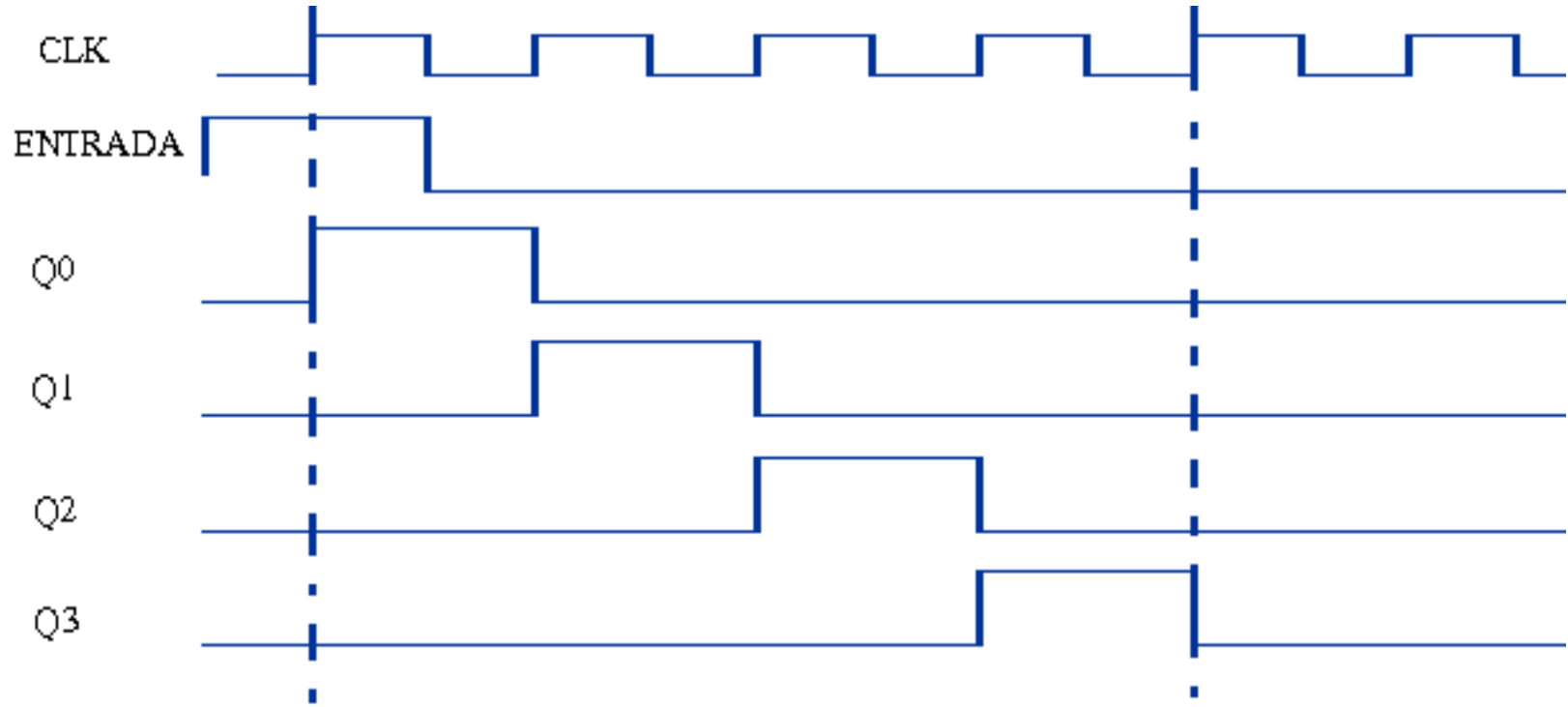
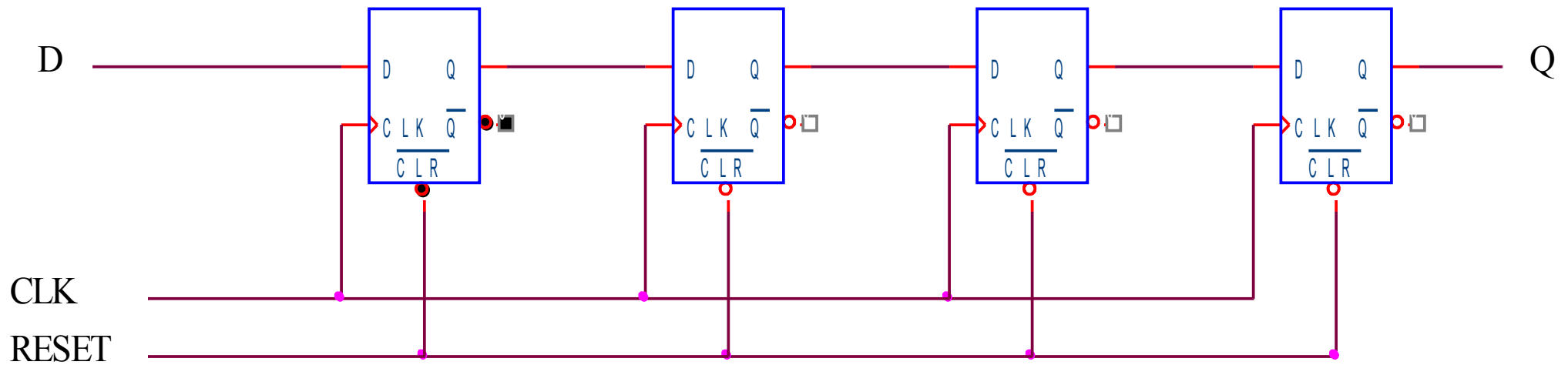
Desplazamiento de datos



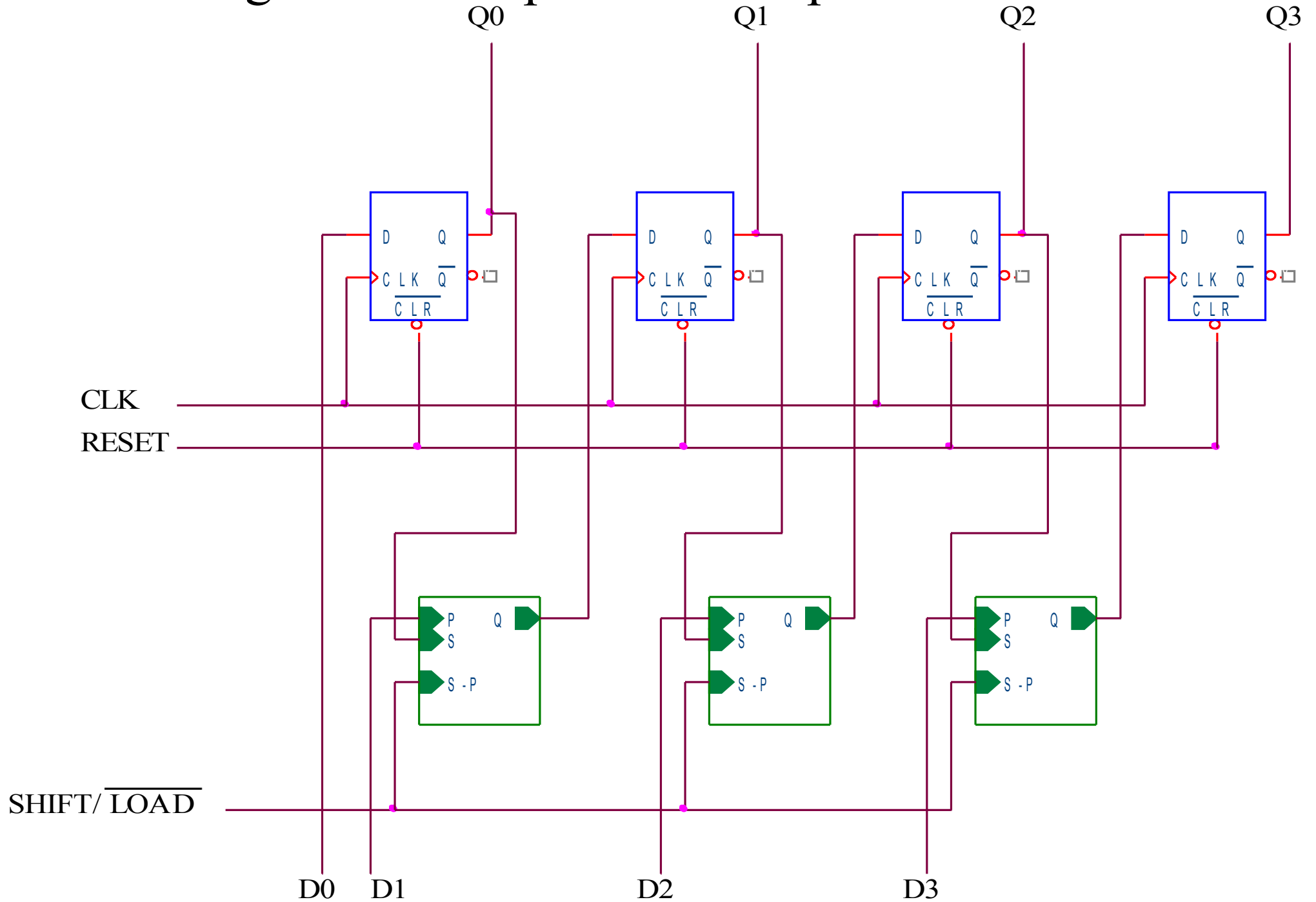
Registro de desplazamiento serie-paralelo

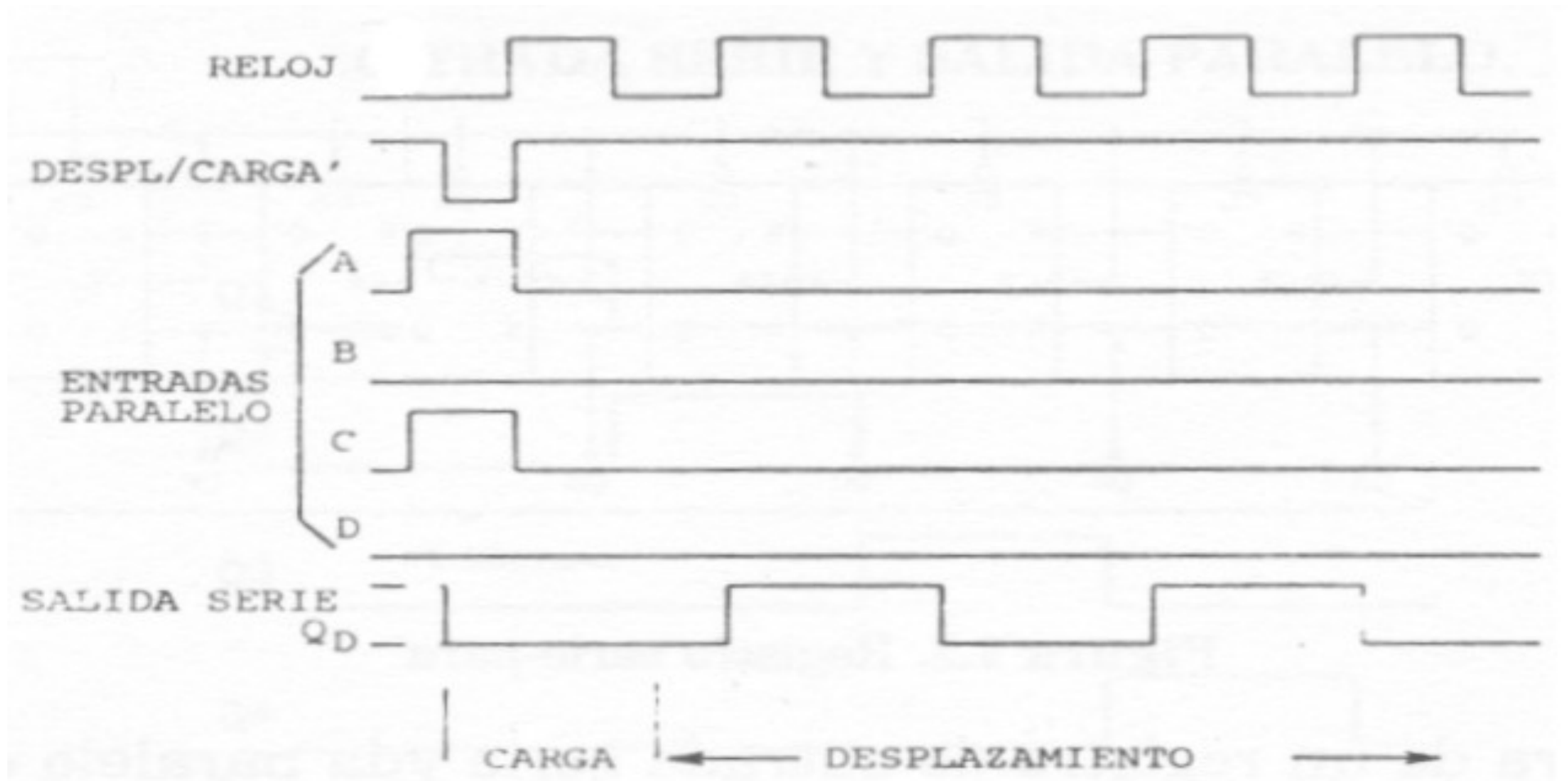
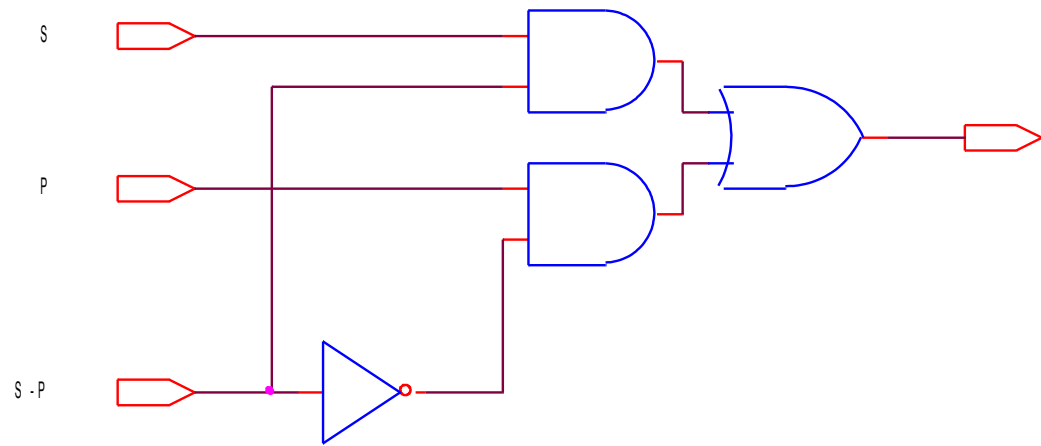


Registro de desplazamiento serie-serie

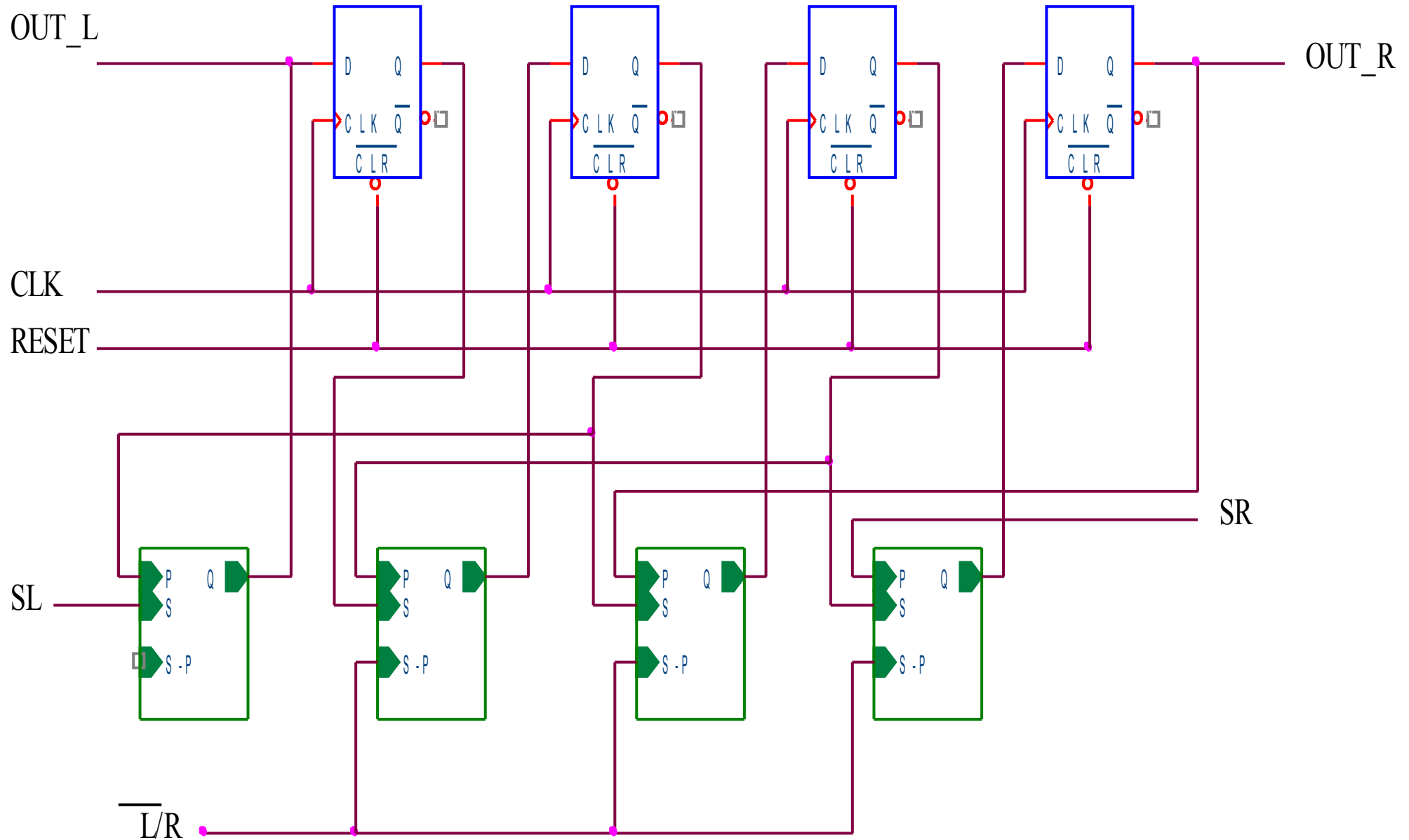


Registro de desplazamiento paralelo-serie

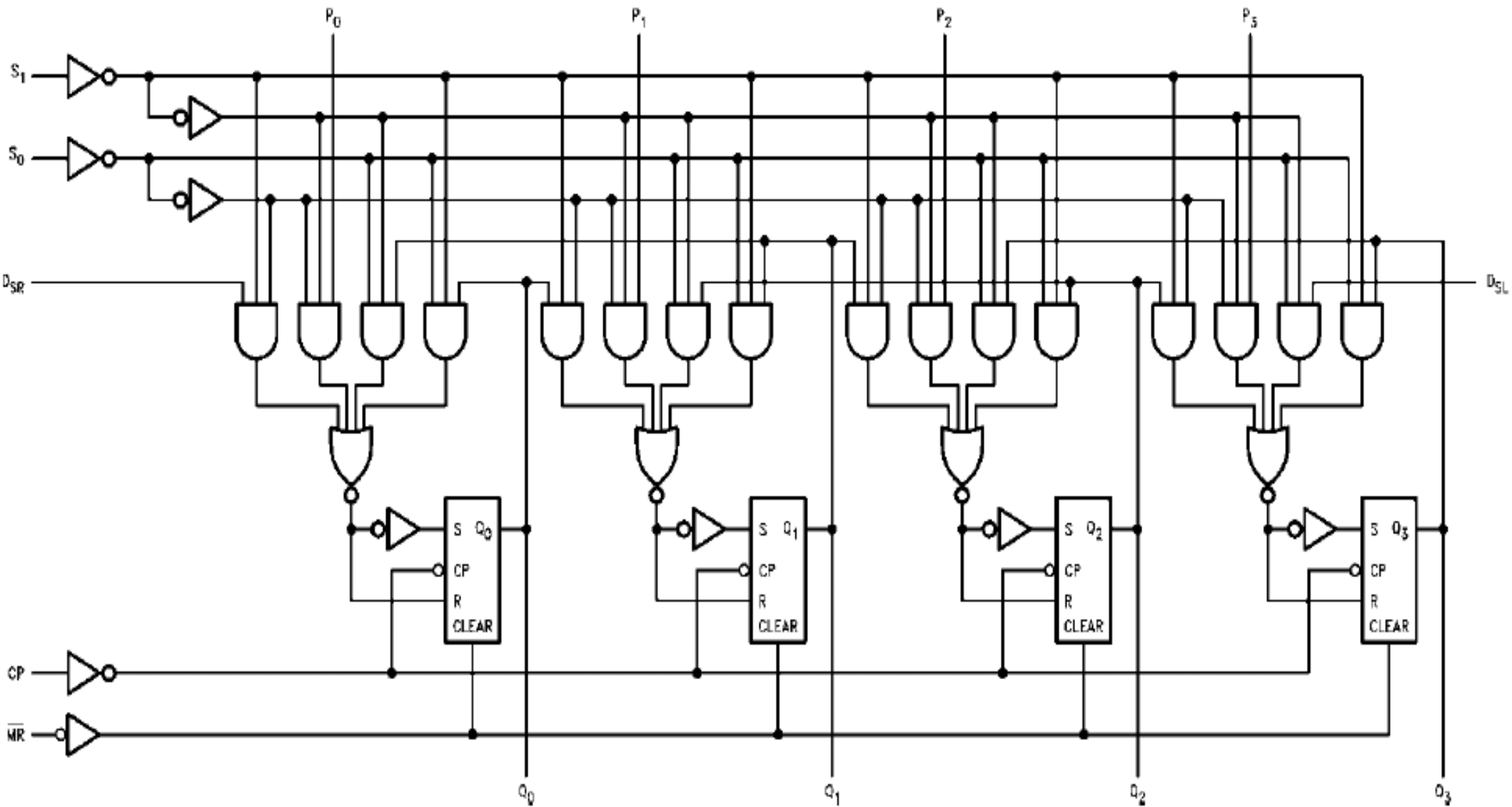




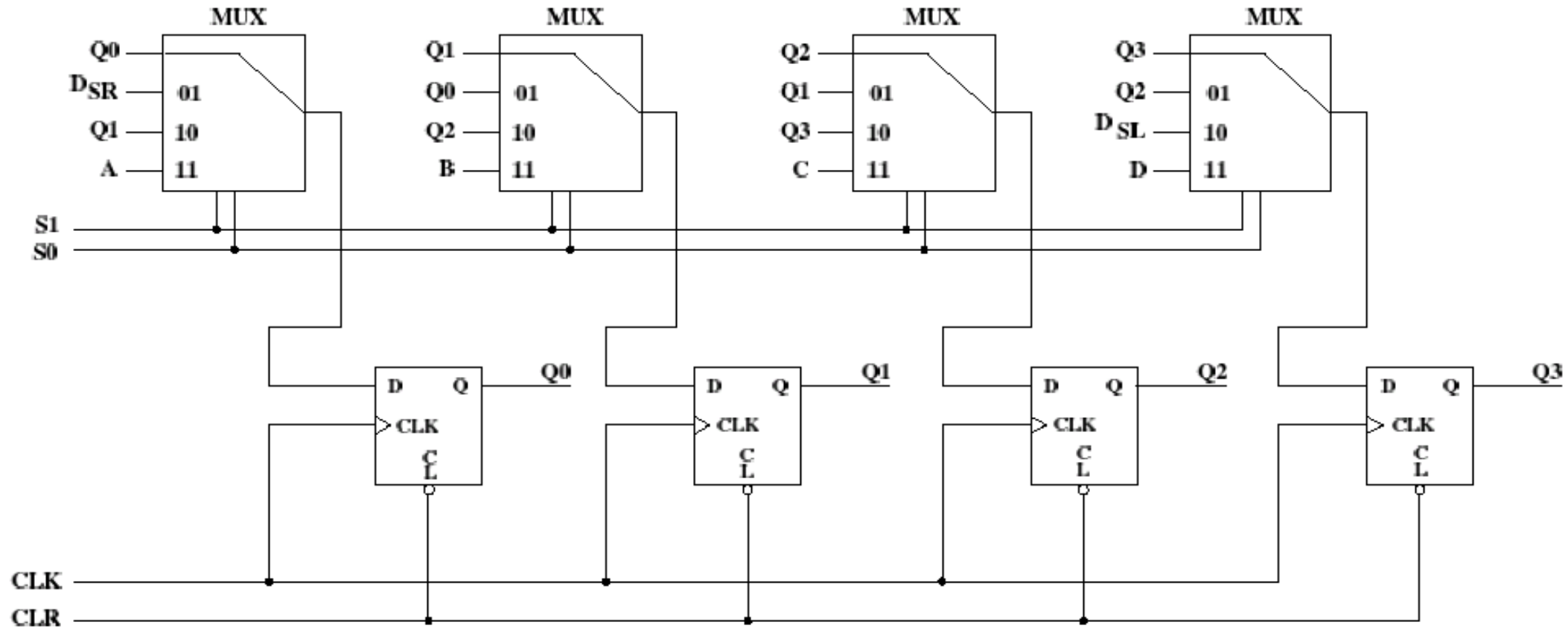
Registro de desplazamiento serie-serie reversible



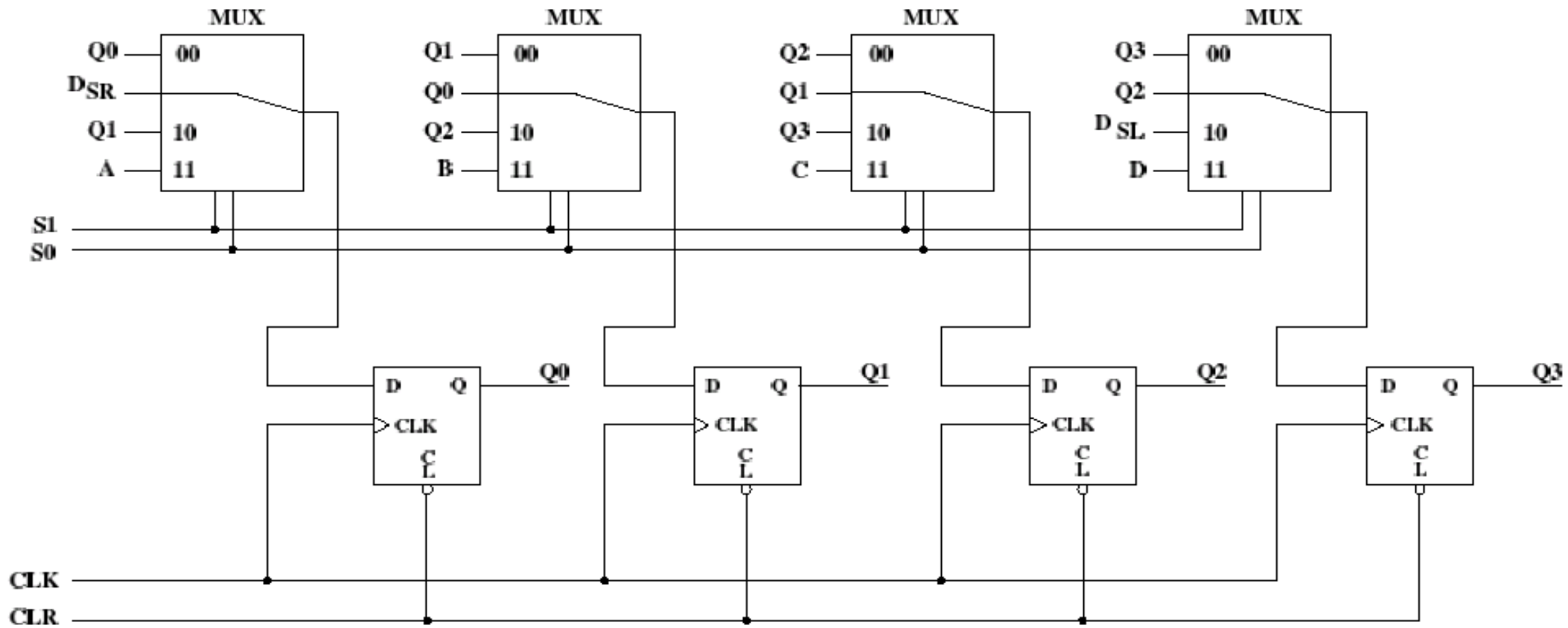
Registro de desplazamiento universal 74LS194



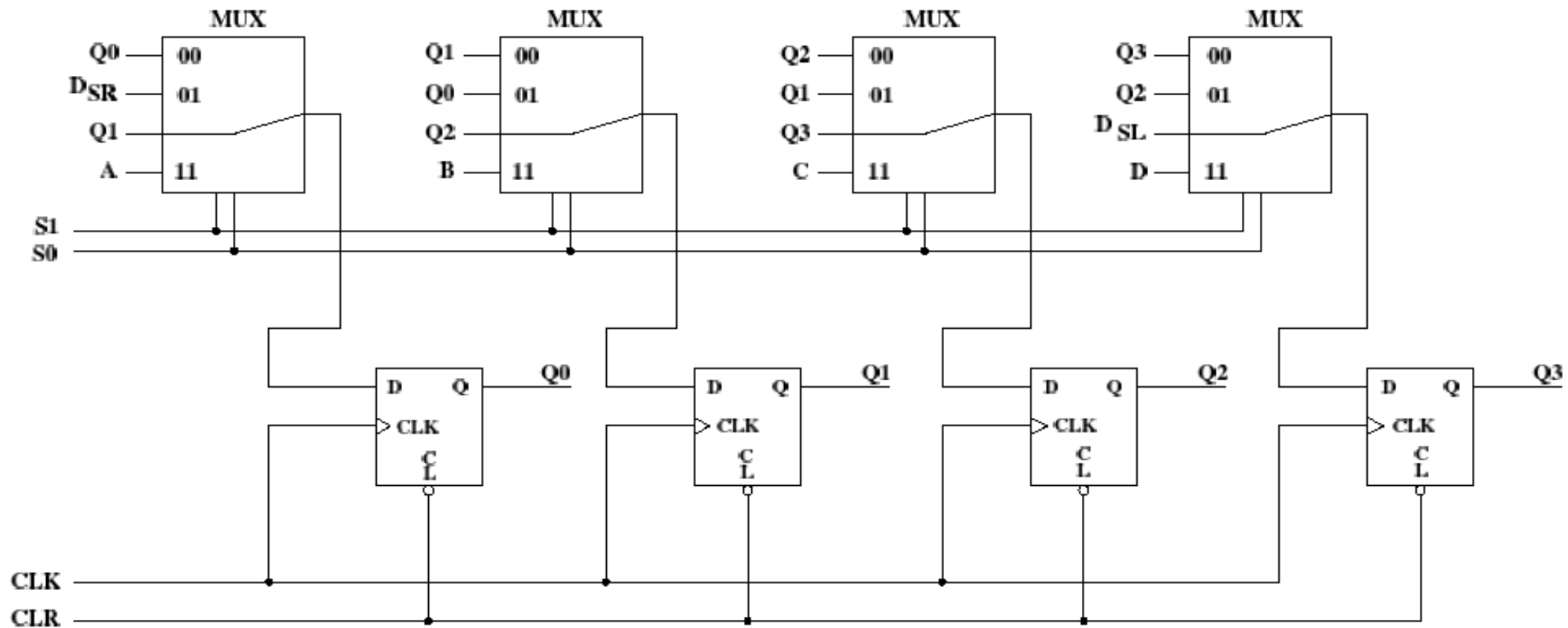
74LS194 modo mantenimiento ($S_1S_2=00$)



74LS194 modo desplazamiento izda. ($S_1S_2=01$)



74LS194 modo desplazamiento dcha. ($S_1S_2=10$)



74LS194 modo carga paralelo ($S_1S_2=11$)

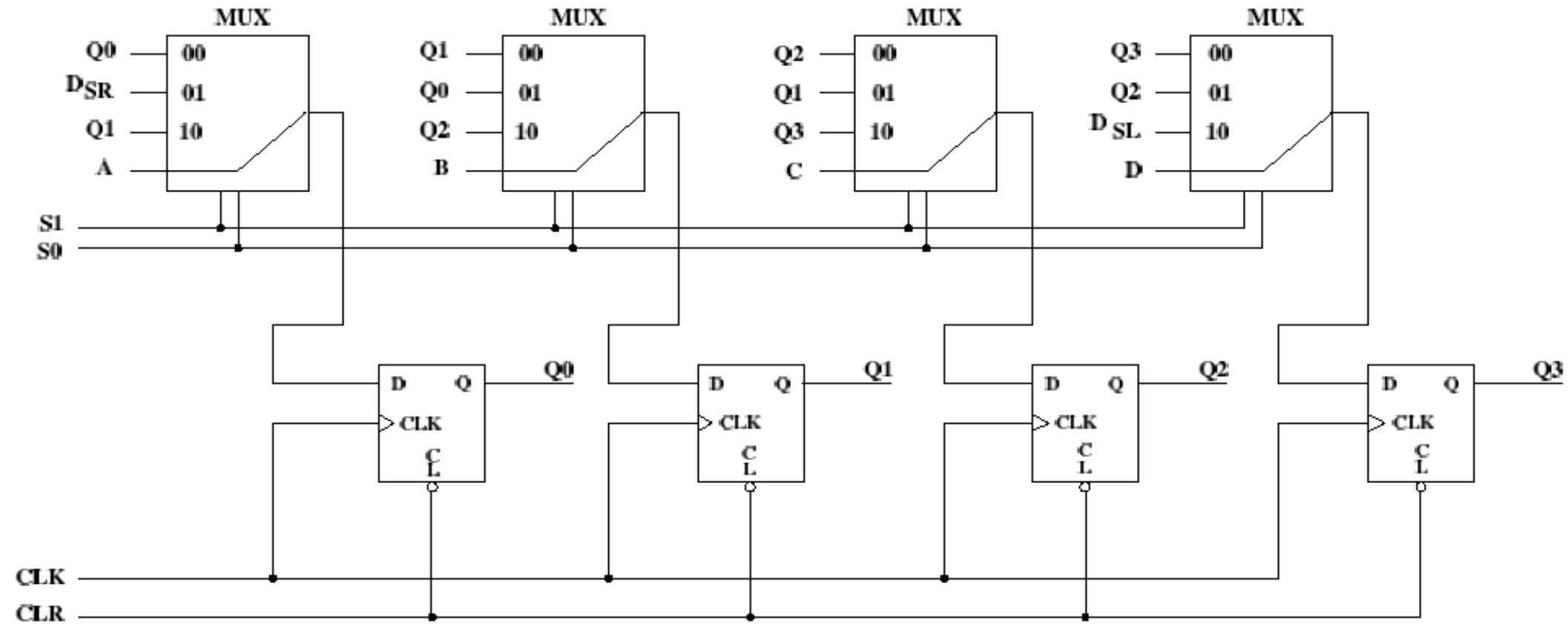
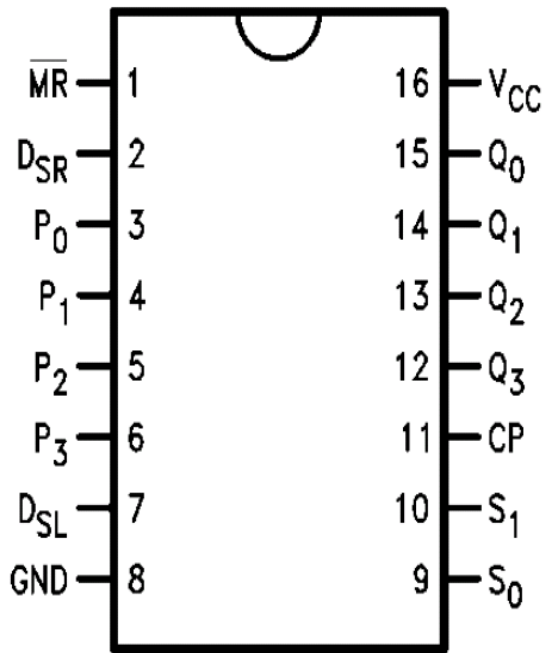


Tabla de funcionamiento y símbolo lógico



Operating Mode	Inputs						Outputs			
	$\overline{\text{MR}}$	S_1	S_0	D_{SR}	D_{SL}	P_n	Q_0	Q_1	Q_2	Q_3
Reset	L	X	X	X	X	X	L	L	L	L
Hold	H	l	l	X	X	X	q_0	q_1	q_2	q_3
Shift Left	H	h	l	X	l	X	q_1	q_2	q_3	L
	H	h	l	X	h	X	q_1	q_2	q_3	H
Shift Right	H	l	h	l	X	X	L	q_0	q_1	q_2
	H	l	h	h	X	X	H	q_0	q_1	q_2
Parallel Load	H	h	h	X	X	p_n	p_0	p_1	p_2	p_3

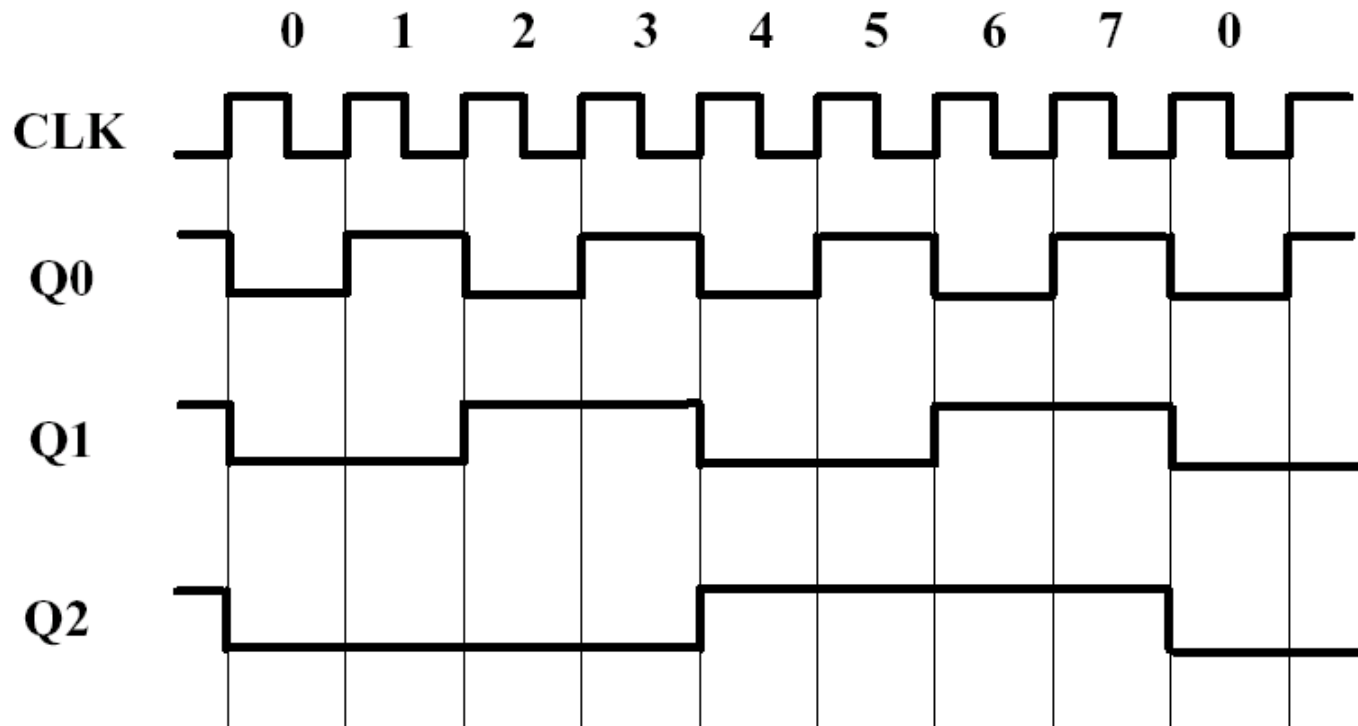
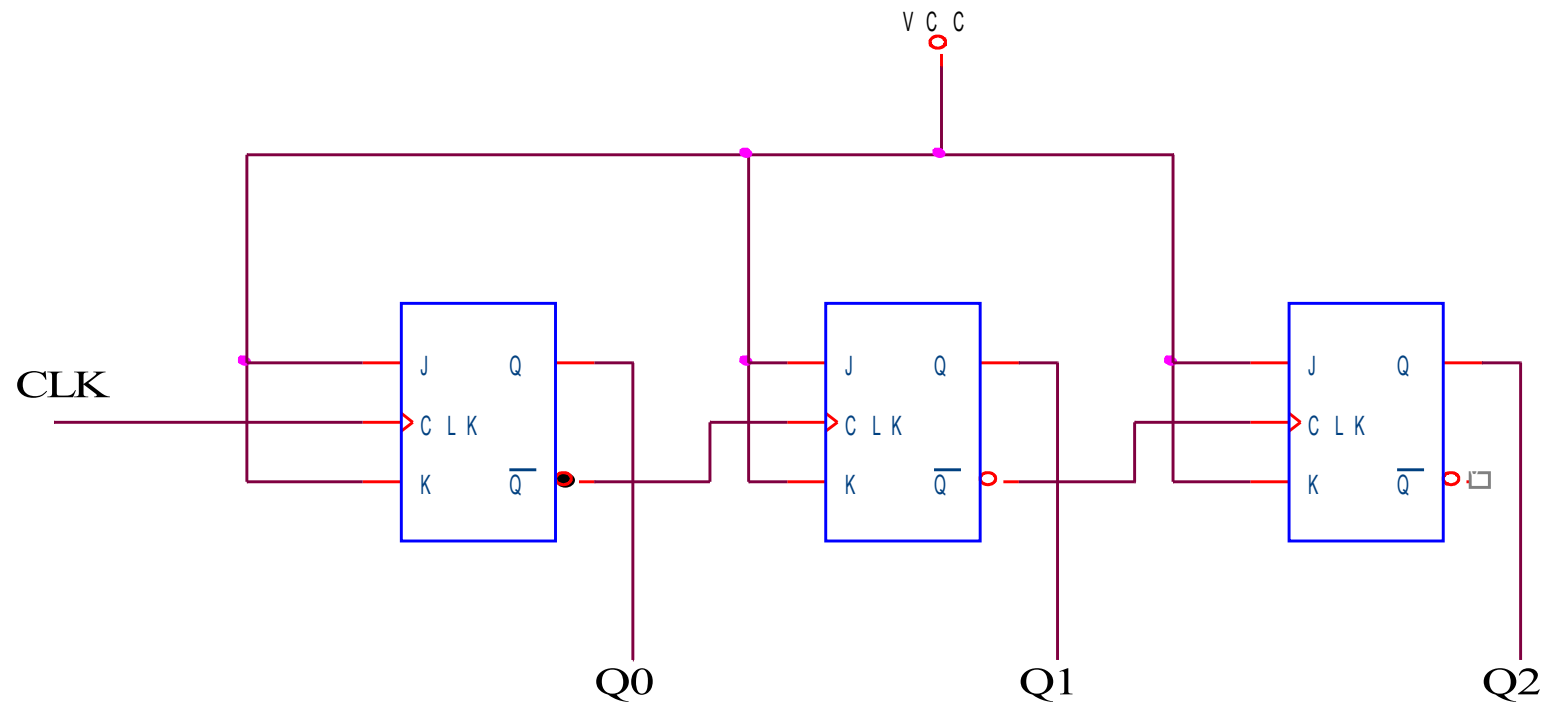
H (h) = HIGH Voltage Level

L (l) = LOW Voltage Level

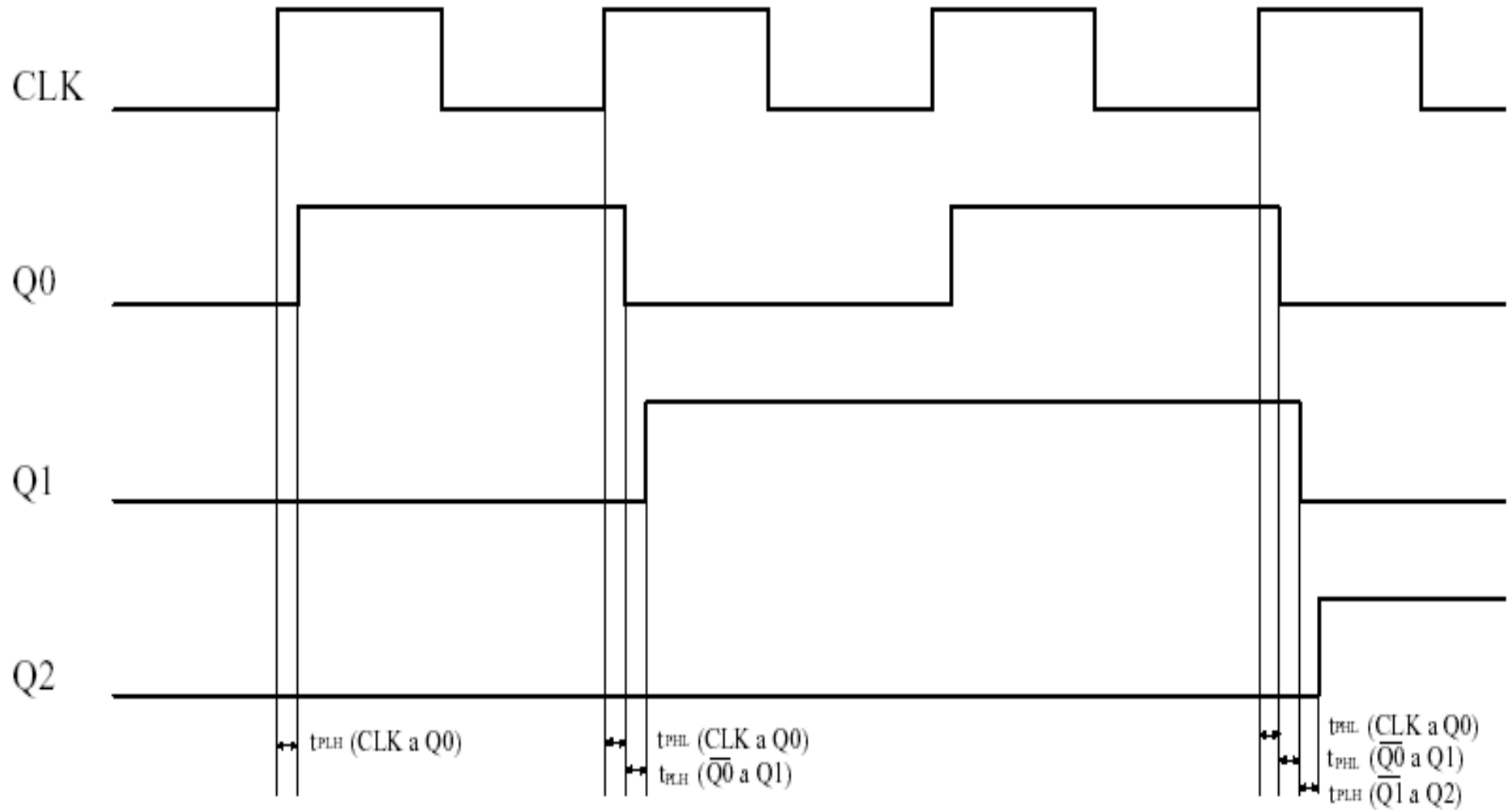
p_n (q_n) = Lower case letters indicate the state of the referenced input (or output) one setup time prior to the LOW-to-HIGH clock transition.

X = Immaterial

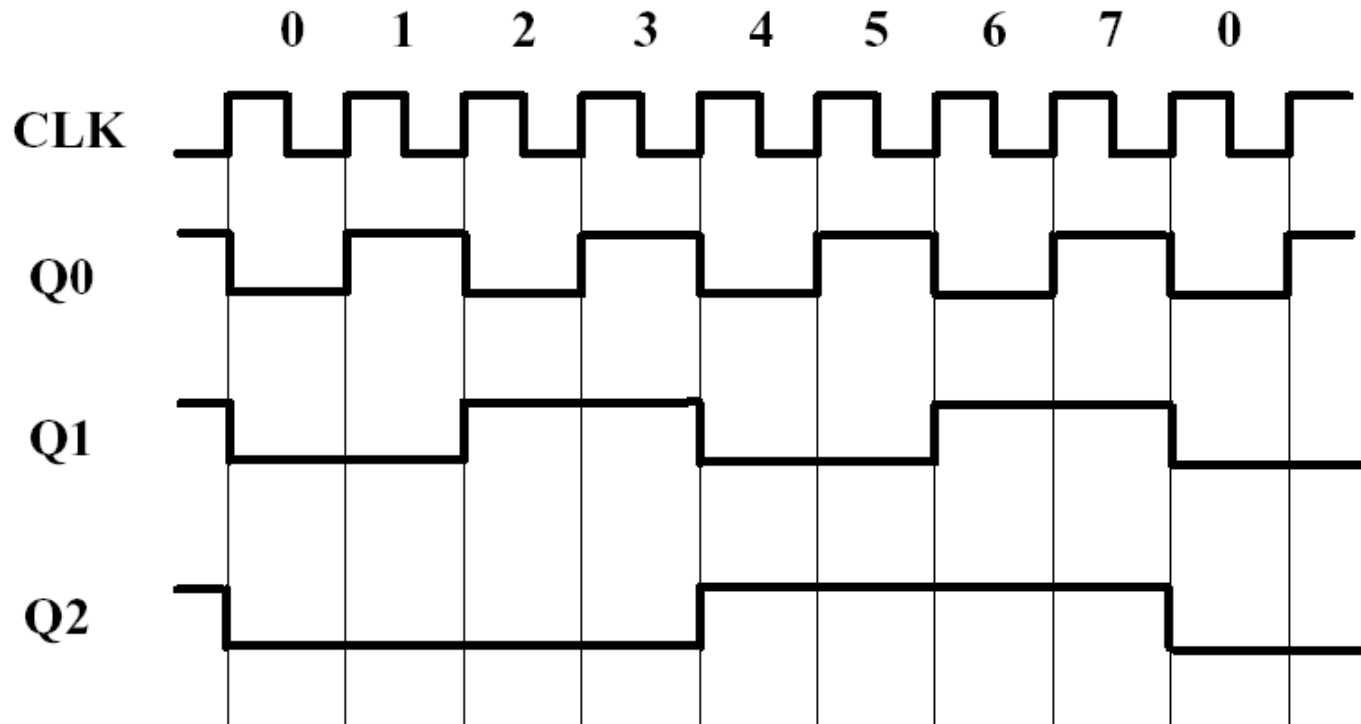
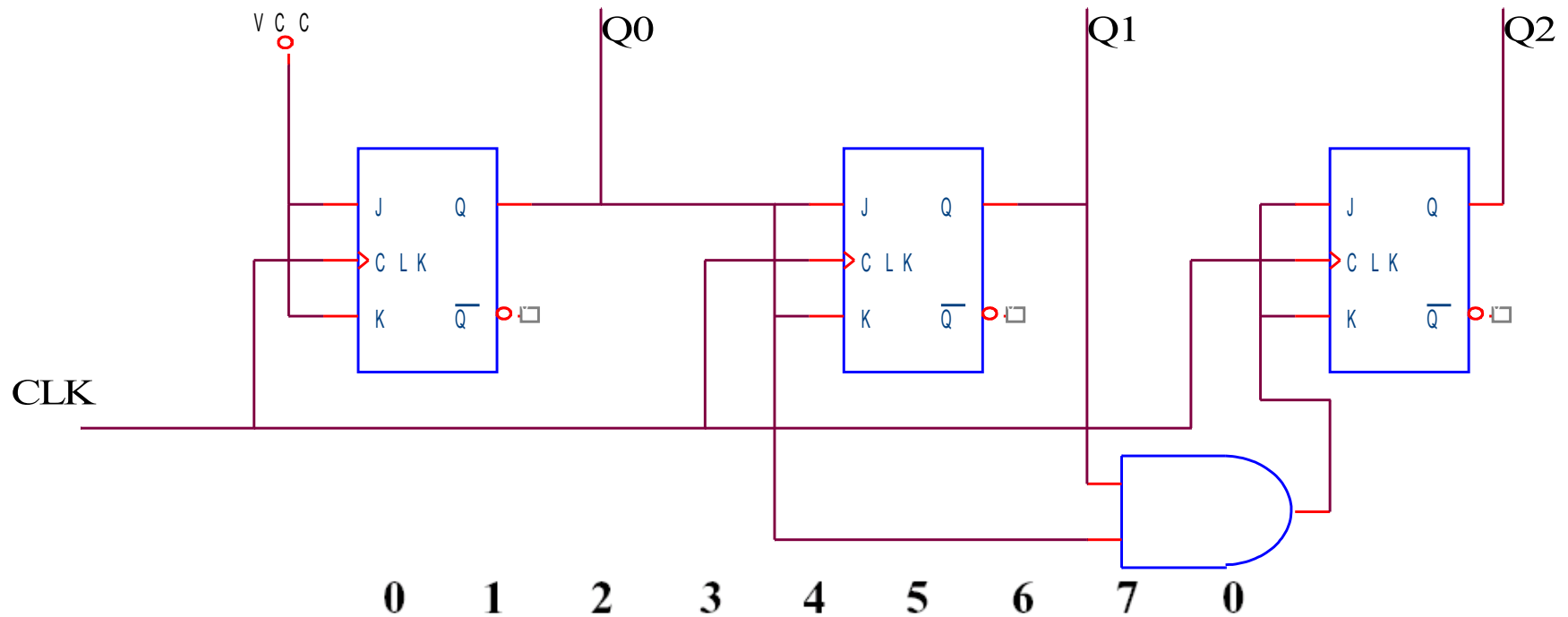
Contador asíncrono



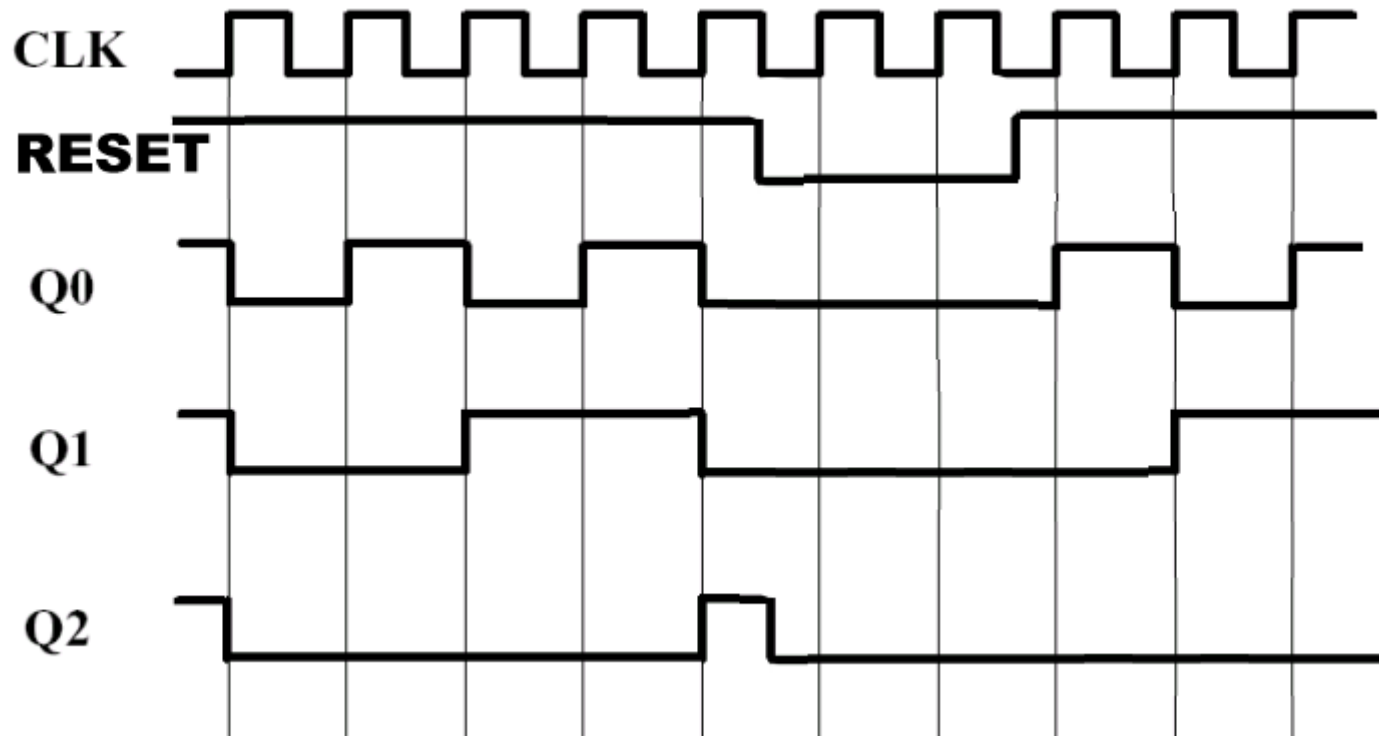
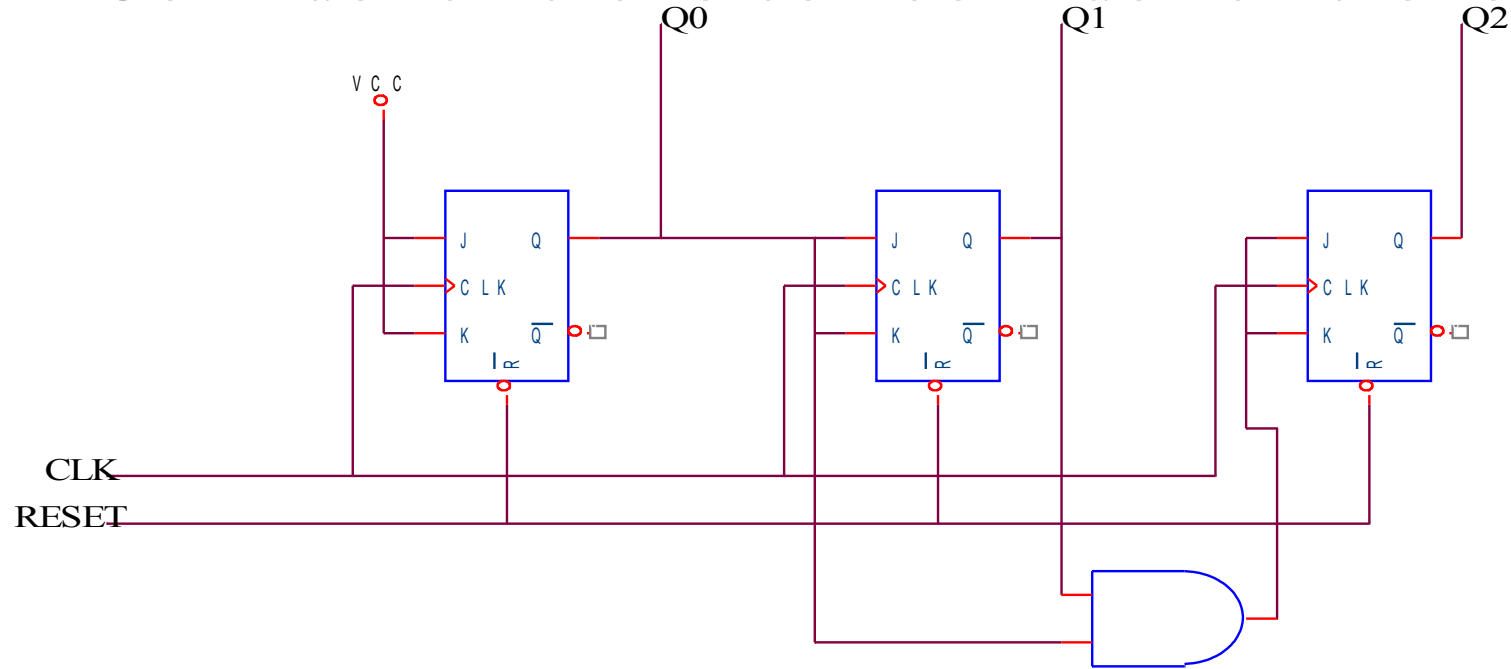
Problemas de los contadores asíncronos: cuenta falsa



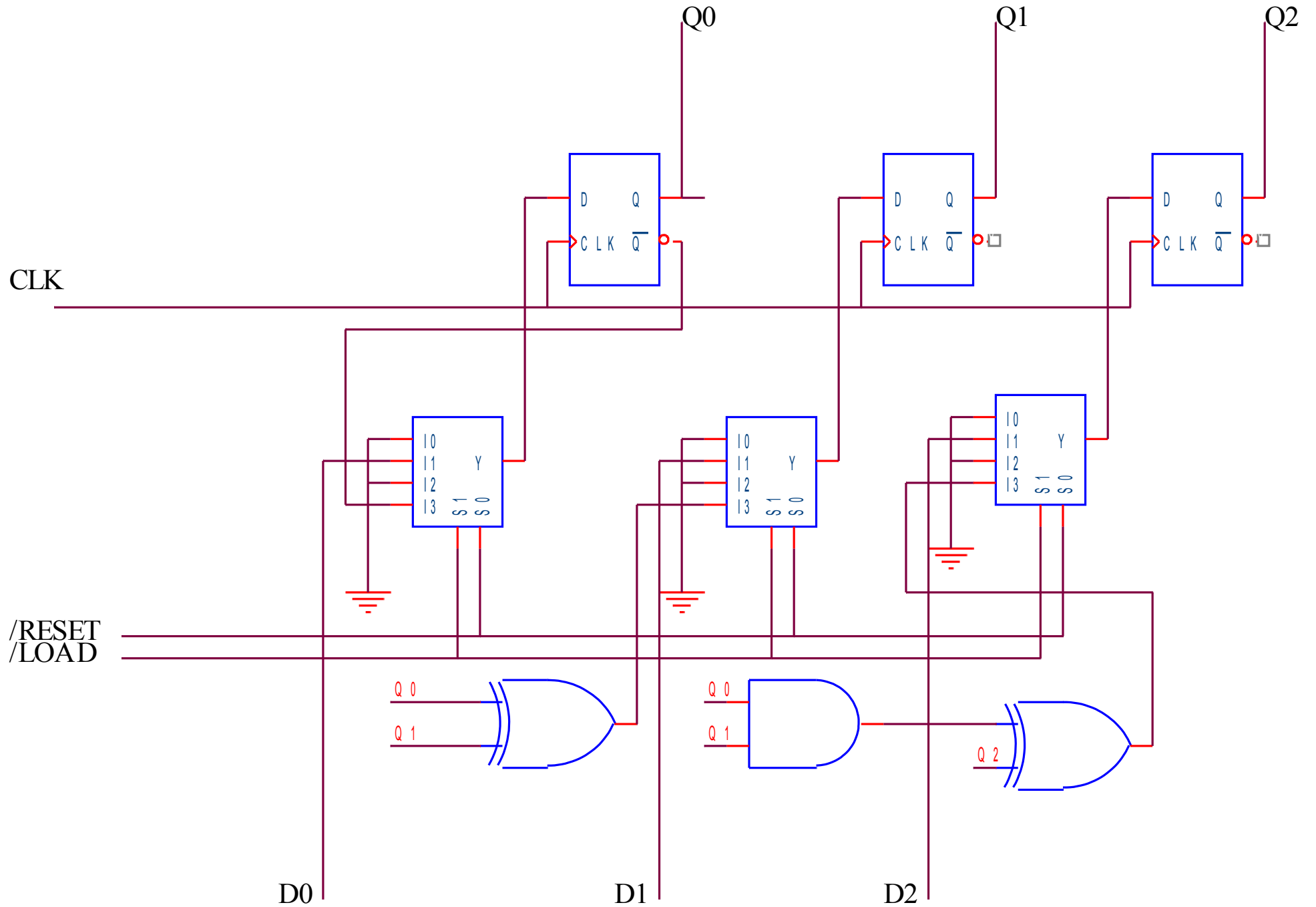
Contador síncrono



Contador síncrono con borrado asíncrono




Contador síncrono con borrado y carga síncronos



Contador de décadas 74LS160/74LS162

Mode Select Table

* \overline{SR}	\overline{PE}	CET	CEP	Action on the Rising Clock Edge ()
L	X	X	X	RESET (Clear)
H	L	X	X	LOAD ($P_n \rightarrow Q_n$)
H	H	H	H	COUNT (Increment)
H	H	L	X	NO CHANGE (Hold)
H	H	X	L	NO CHANGE (Hold)

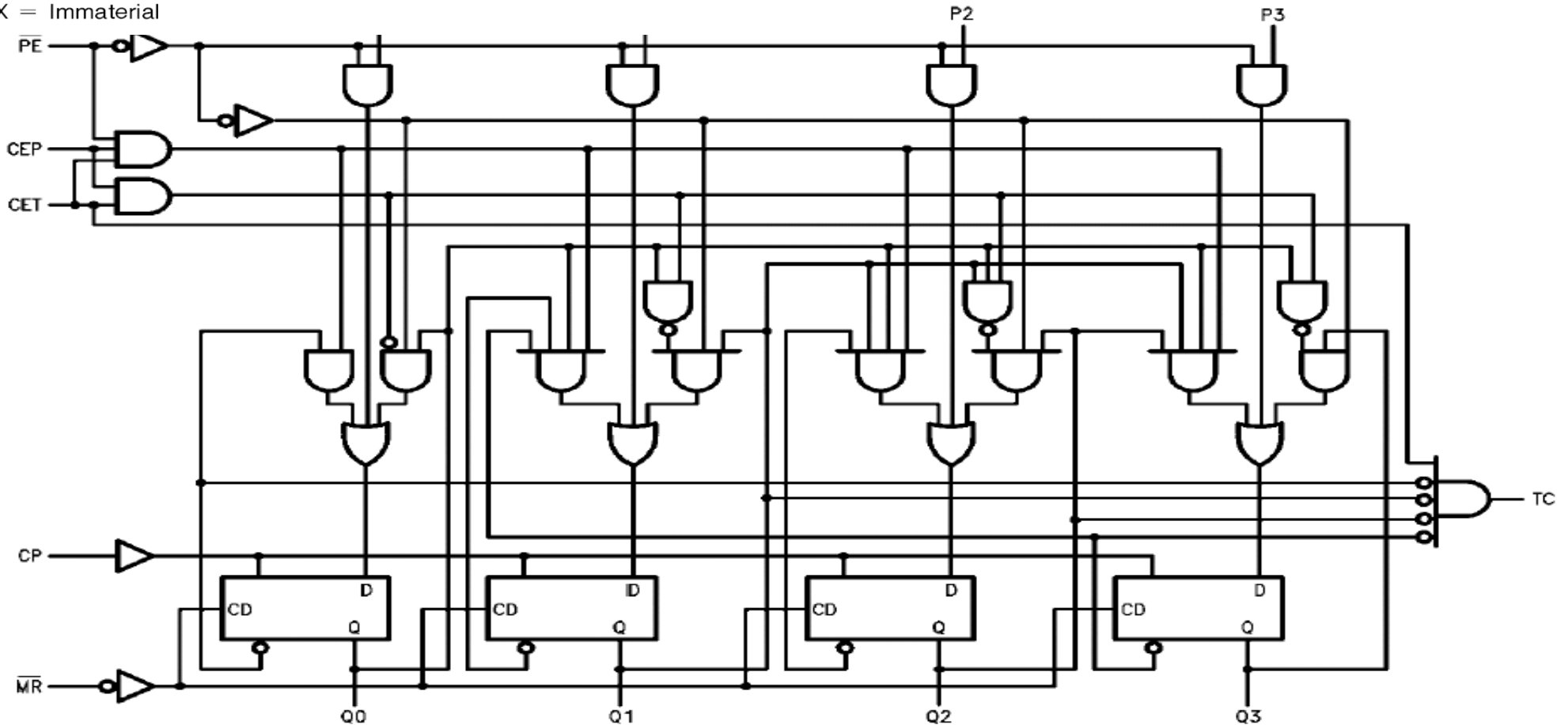
- Cuenta síncrona
- Carga paralelo síncrona
- Borrado asíncrono

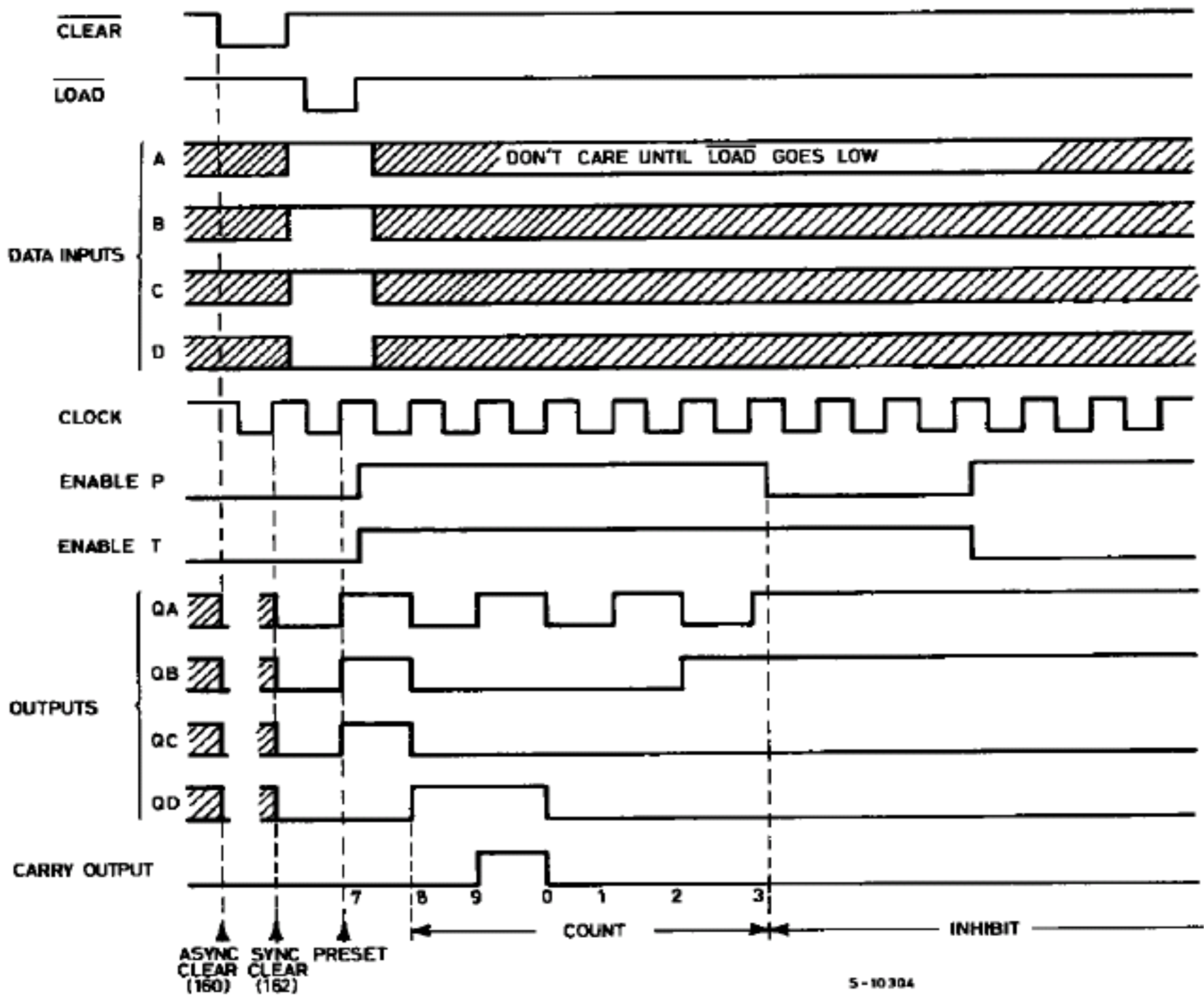
*For the 'LS162

H = HIGH Voltage Level

L = LOW Voltage Level

X = Immaterial





Contador en anillo

