

# Sistemas Digitales

## Análisis de Maquinas de Estado Sincronizadas

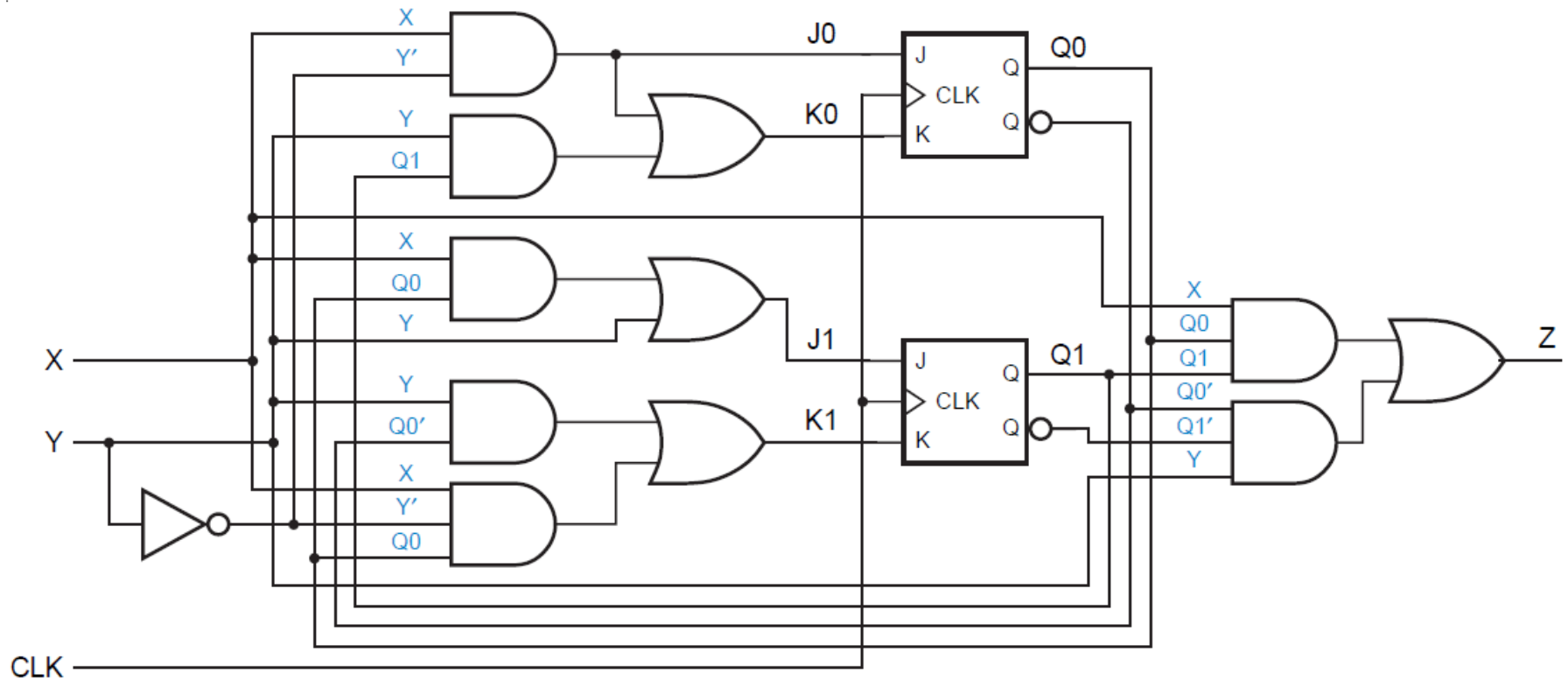
### Parte II

Prof. Luis Araujo

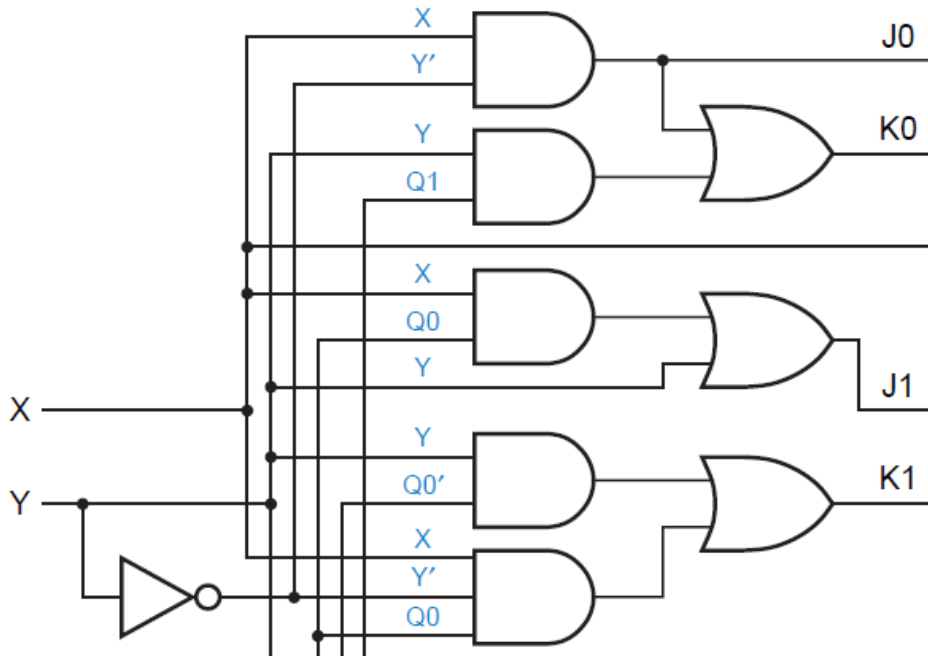
Escuela de Ingeniería Eléctrica



# Máq. Estado con JK



# Ecuaciones de Excitación



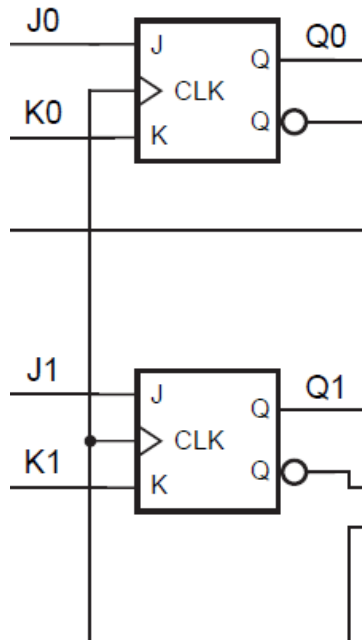
$$J0 = X \cdot \bar{Y}$$

$$K0 = X \cdot \bar{Y} + Y \cdot Q1$$

$$J1 = X \cdot Q0 \cdot Y + Y$$

$$K1 = X \cdot \overline{Q0} + X \cdot \bar{Y} \cdot Q0$$

# Ecuaciones de Transición



Ecuación Característica:

$$Q = J \cdot \bar{Q} + \bar{K} \cdot Q$$

$$Q0^* = J0 \cdot \bar{Q0} + \bar{K0} \cdot Q0$$

$$Q0^* = X \cdot \bar{Y} \cdot \bar{Q0} + \overline{X \cdot \bar{Y} + Y \cdot Q1} \cdot Q0$$

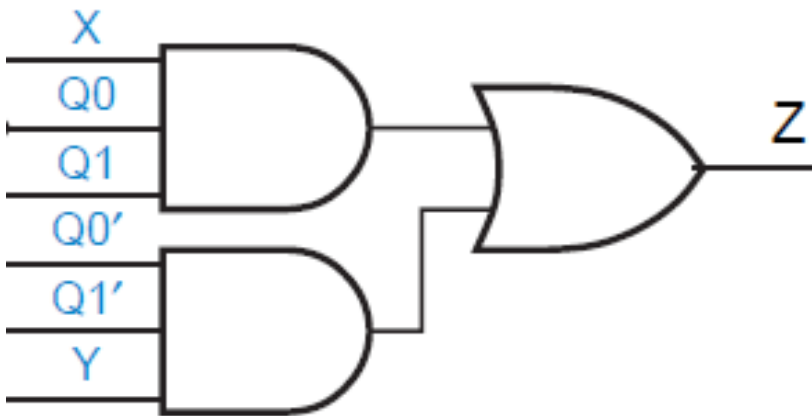
$$Q0^* = X \cdot \bar{Y} \cdot \bar{Q0} + \bar{X} \cdot \bar{Y} \cdot Q0 + \bar{X} \cdot \bar{Q1} \cdot Q0 + Y \cdot \bar{Q1} \cdot Q0$$

$$Q1^* = J1 \cdot \bar{Q1} + \bar{K1} \cdot Q1$$

$$Q1^* = \frac{(X \cdot Q0 \cdot Y + Y) \cdot \bar{Q1}}{+ X \cdot \bar{Q0} + X \cdot \bar{Y} \cdot Q0} \cdot Q1$$

$$Q1^* = X \cdot \bar{Q1} \cdot Q0 + Y \cdot \bar{Q1} + \bar{X} \cdot \bar{Y} \cdot Q1 + \bar{X} \cdot Q1 \cdot Q0 + Y \cdot Q1 \cdot Q0$$

# Ecuaciones de Salida



$$Z = X \cdot Q0 \cdot Q1 + Y \cdot \overline{Q0} \cdot \overline{Q1}$$

# Tabla de Transición/Salida

Q1 Q0	XY = 00	XY = 01	XY = 10	XY = 11
0 0	0 0 / 0	1 0 / 1	0 1 / 0	1 0 / 1
0 1	0 1 / 0	1 1 / 0	1 0 / 0	1 1 / 0
1 0	1 0 / 0	0 0 / 0	1 1 / 0	0 0 / 0
1 1	1 1 / 0	1 0 / 0	0 0 / 1	1 0 / 1
	Q1* Q0* / Z			

# Asignación de Estado

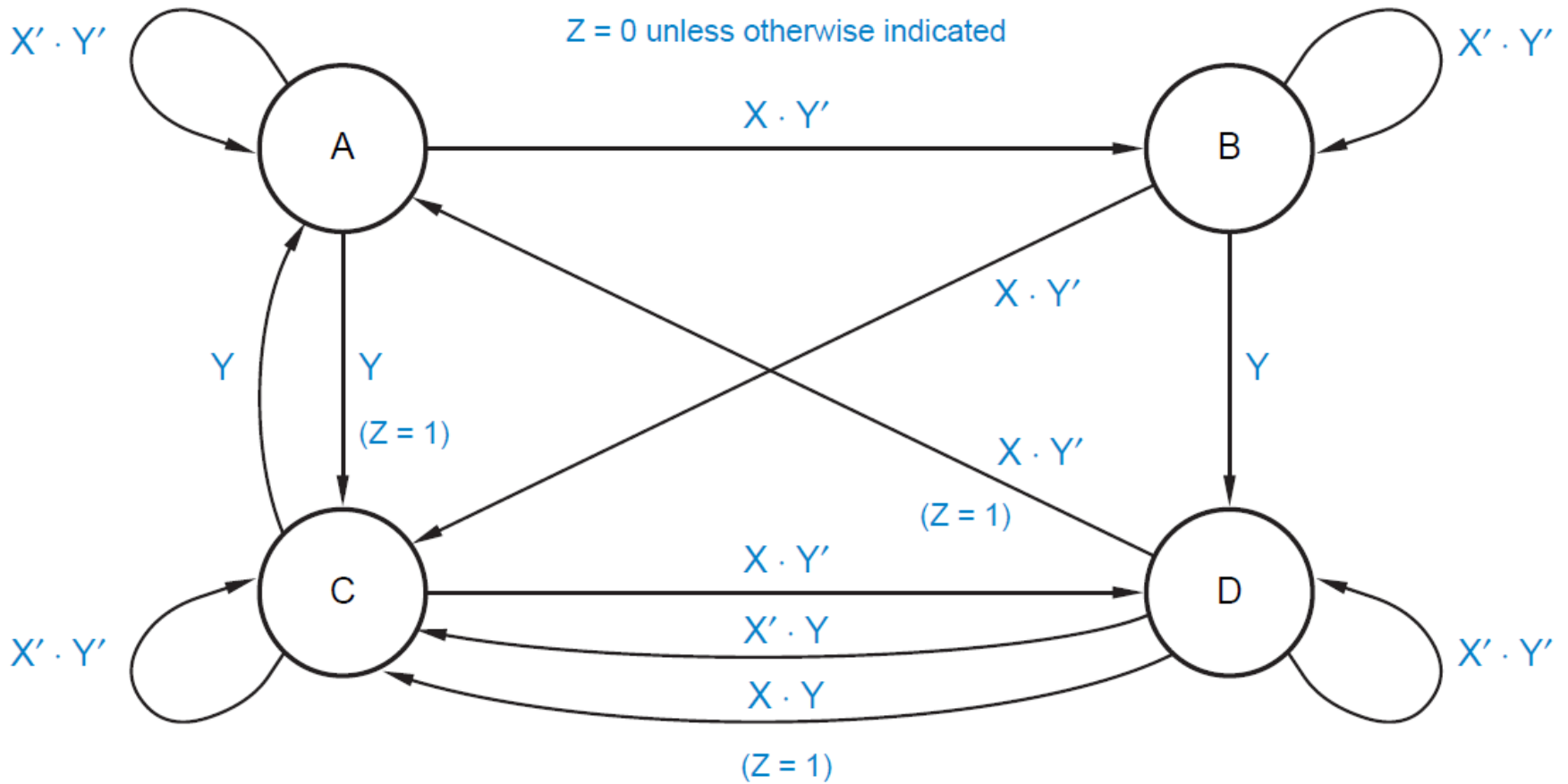
Q1 Q0	EDO
0 0	A
0 1	B
1 0	C
1 1	D

# Tabla de Estados/Salida

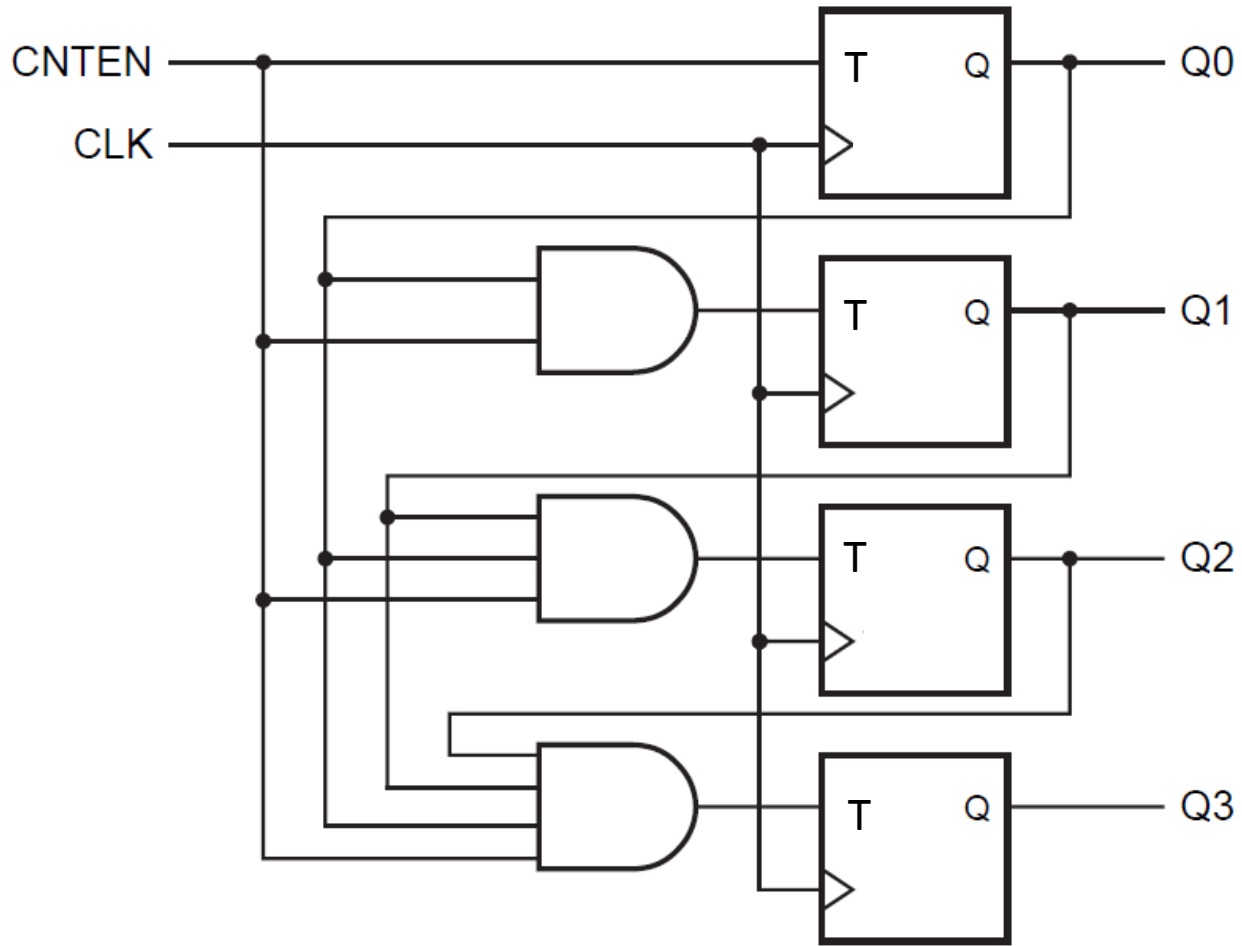
EDO	XY = 00	XY = 01	XY = 10	XY = 11
A	A / 0	C / 1	B / 0	C / 1
B	B / 0	D / 0	C / 0	D / 0
C	C / 0	A / 0	D / 0	A / 0
D	D / 0	C / 0	A / 1	C / 1
	EDO* / Z			



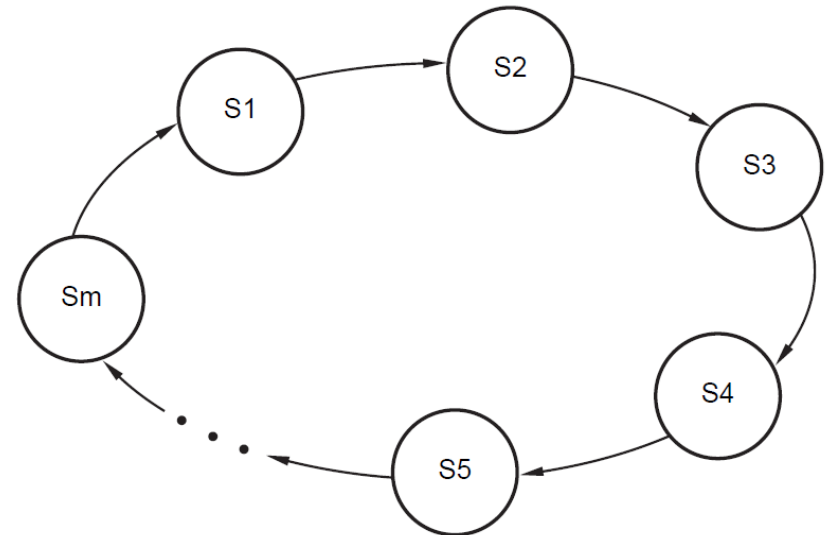
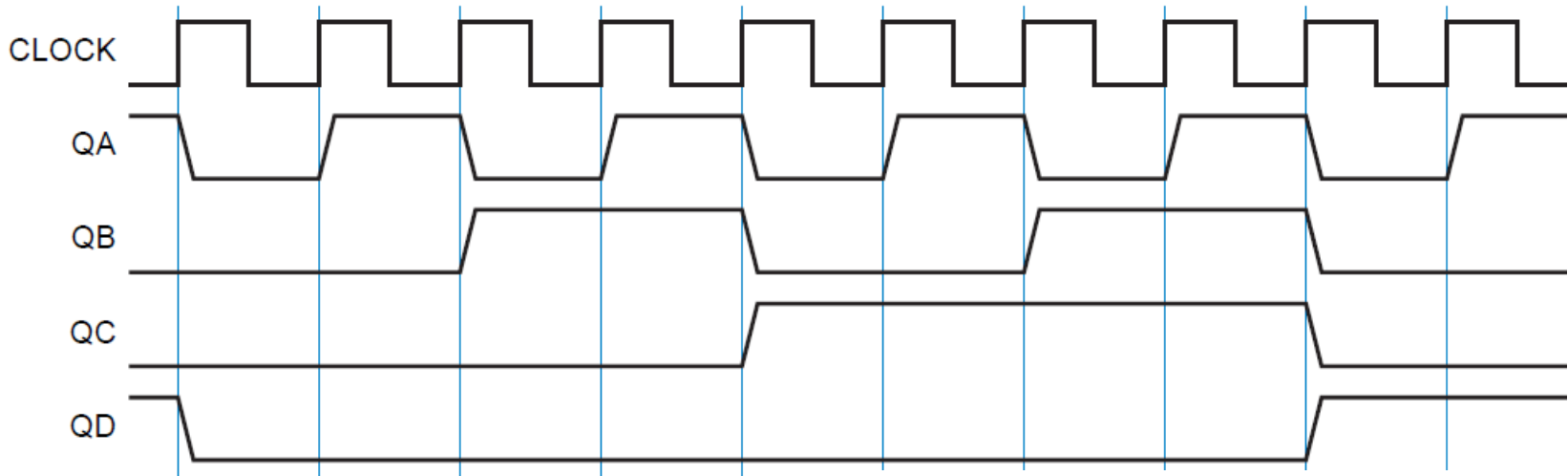
# Diagrama de Estado



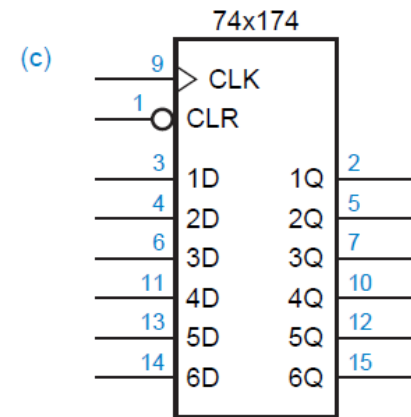
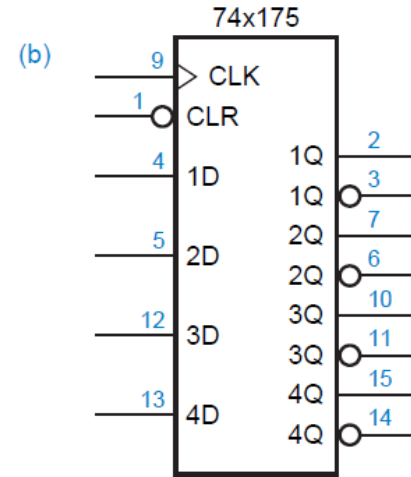
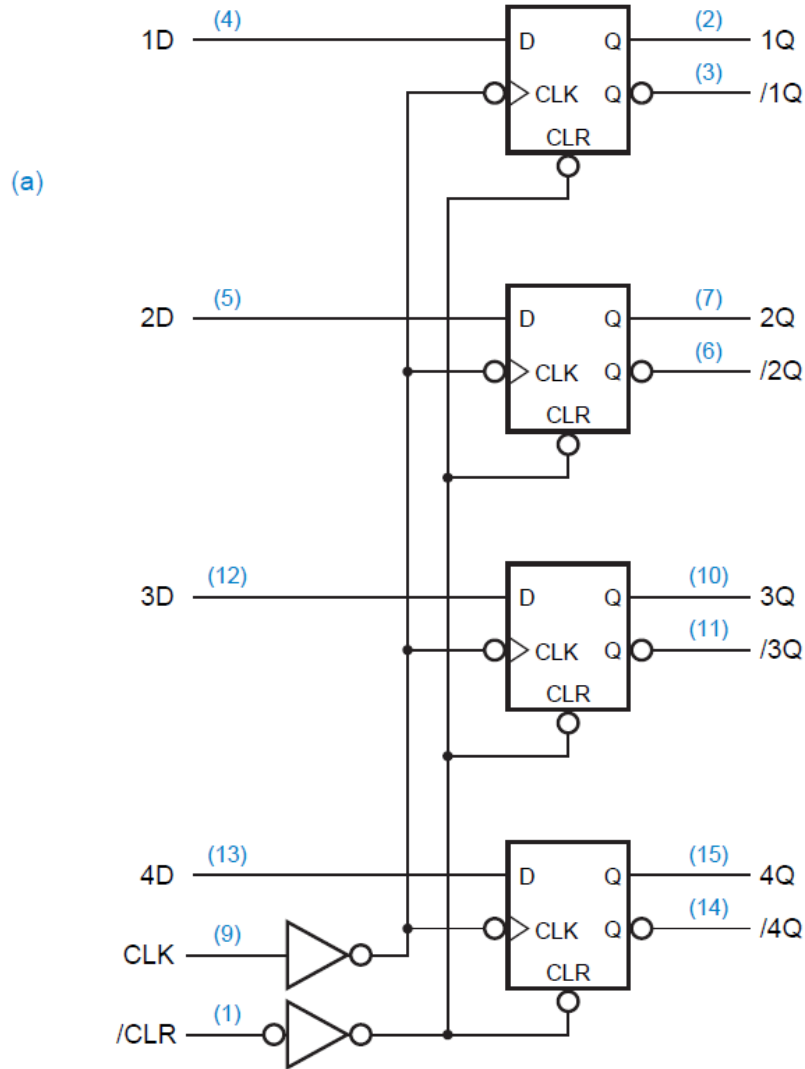
# Otro Ejemplo



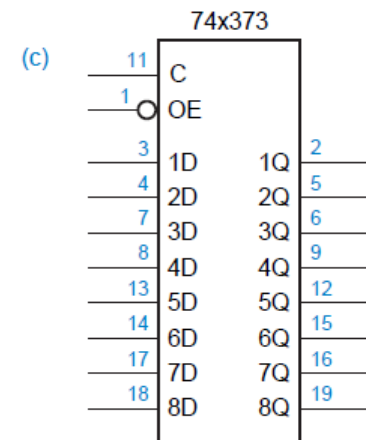
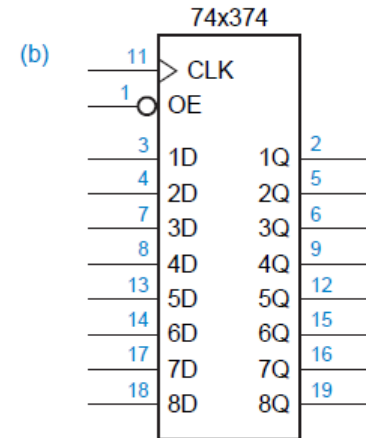
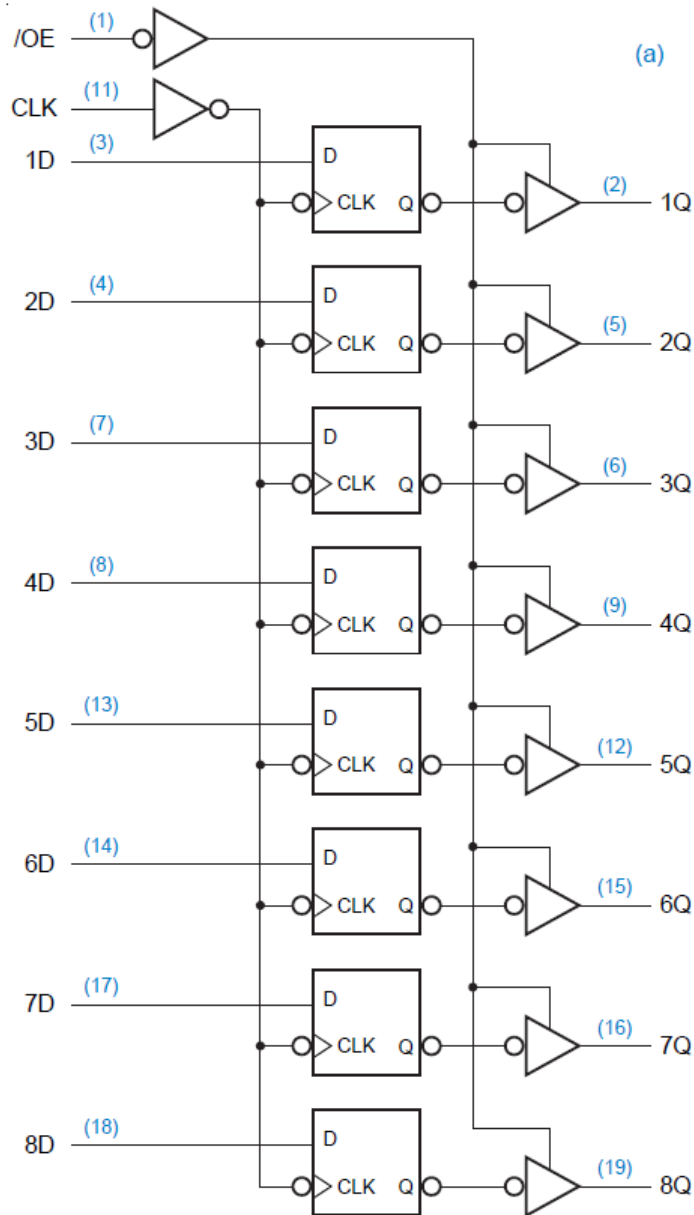
# Diagrama de Temporización



# Registros



# Registros



# Registros

