***8.29** Derive the state table for the circuit in Figure P8.2. What sequence of input values on wire w is detected by this circuit?

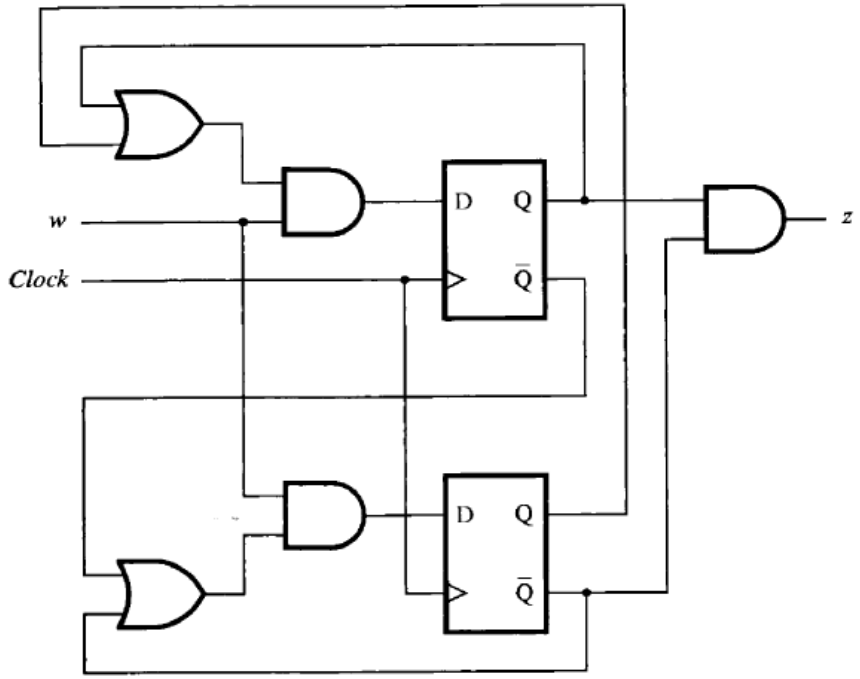


Figure P8.2 Circuit for problem 8.29.

29.

Present state	Next state		Output
	$w = 0$	$w = 1$	z
A	A	C	0
B	A	D	1
C	A	D	0
D	A	B	0

The circuit produces $z = 1$ whenever the input sequence on w comprises a 0 followed by an even number of 1s.

•8.29 Derive the state table for the circuit in Figure P8.2. What sequence of input values on wire w is detected by this circuit?

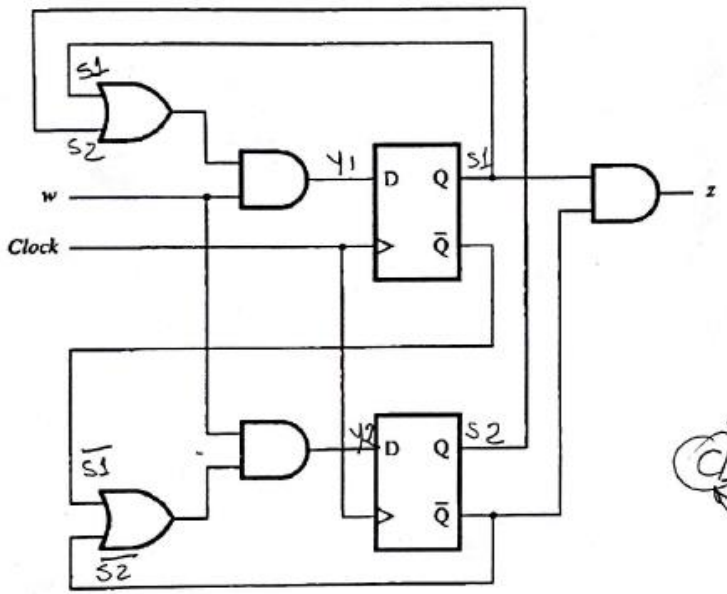


Figure P8.2 Circuit for problem 8.29.

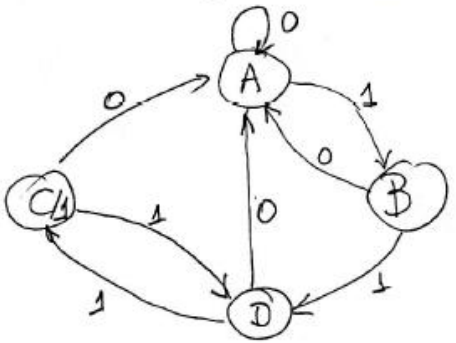
$z = S_1 \cdot \bar{S}_2$

$Y_1 = w(S_1 + S_2)$

$Y_2 = w(\bar{S}_1 + \bar{S}_2) = w\,\overline{(S_1 S_2)}$

S_1S_2	$w=0$ Y_1Y_2	$w=1$ Y_1Y_2	z
0 0	0 0	0 1 B	0
0 1	0 0	1 1 D	0
1 0	0 0	1 1 D	1
1 1	0 0	1 0 C	0

ESTATI	PROX EST $w=0$	$w=1$	z
A	A	B	0
B	A	D	0
C	A	D	1
D	A	C	0



OK

$B \leftrightarrow C$

w S_1 S_2	Y_1 Y_2	z
0 0 0	0 0	0
0 0 1	0 0	0
0 1 0	0 0	1
0 1 1	0 0	0
1 0 0	0 1	0
1 0 1	1 1	0
1 1 0	1 1	1
1 1 1	1 0	0

29.

Present state	Next state $w=0$	Next state $w=1$	Output z
A	A	C	0
B	A	D	1
C	A	D	0
D	A	B	0

A	A	B	0
C	A	D	1
B	A	D	0
D	A	C	0

The circuit produces $z = 1$ whenever the input sequence on w comprises a 0 followed by an even number of 1s.

odd