

11 Design a code converter that converts a decimal digit from BCD to 84-2-1 code

Ans

Decimal digit	BCD (8421)	84-2-1
	w x y z	A B C D
0	0 0 0 0	0 0 0 0
1	0 0 0 1	0 1 1 1
2	0 0 1 0	0 1 1 0
3	0 0 1 1	0 1 0 1
4	0 1 0 0	0 1 0 0
5	0 1 0 1	1 0 1 1
6	0 1 1 0	1 0 1 0
7	0 1 1 1	1 0 0 1
8	1 0 0 0	1 0 0 0
9	1 0 0 1	1 1 1 1

K map for A

	yz 00	yz 01	yz 11	yz 10
xw 00	0	0	0	0
xw 01	0	1	1	1
xw 11	X	X	X	X
xw 10	1	1	1	X

$$A = wy' + xz + xy$$

Map for B

w \ yz	00	01	11	10
w'00	0	1	1	1
w'01	1	0	0	0
w'11	X	X	X	X
w'10	0	1	X	X

$$B = x'z + x'y + xy'z'$$

Map for C

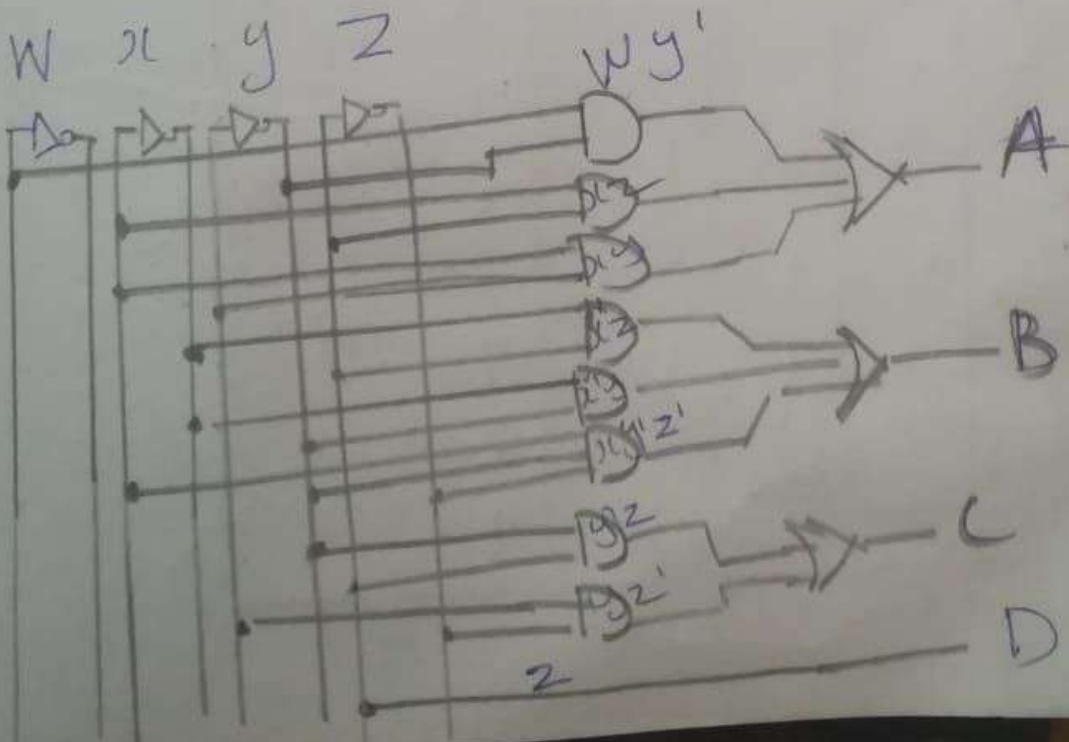
w \ yz	00	01	11	10
w'00	0	1	0	1
w'01	0	1	0	1
w'11	X	X	X	X
w'10	0	1	X	X

$$C = y'z + yz'$$

Map for D

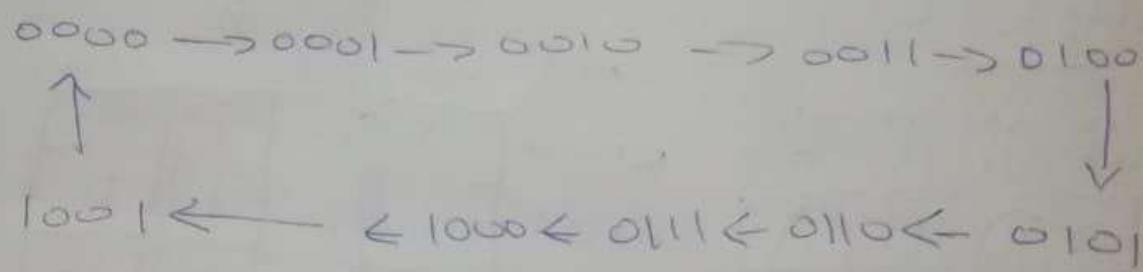
w \ yz	00	01	11	10
w'00	0	1	1	0
w'01	0	1	1	0
w'11	X	X	X	X
w'10	0	1	X	X

$$D = z$$

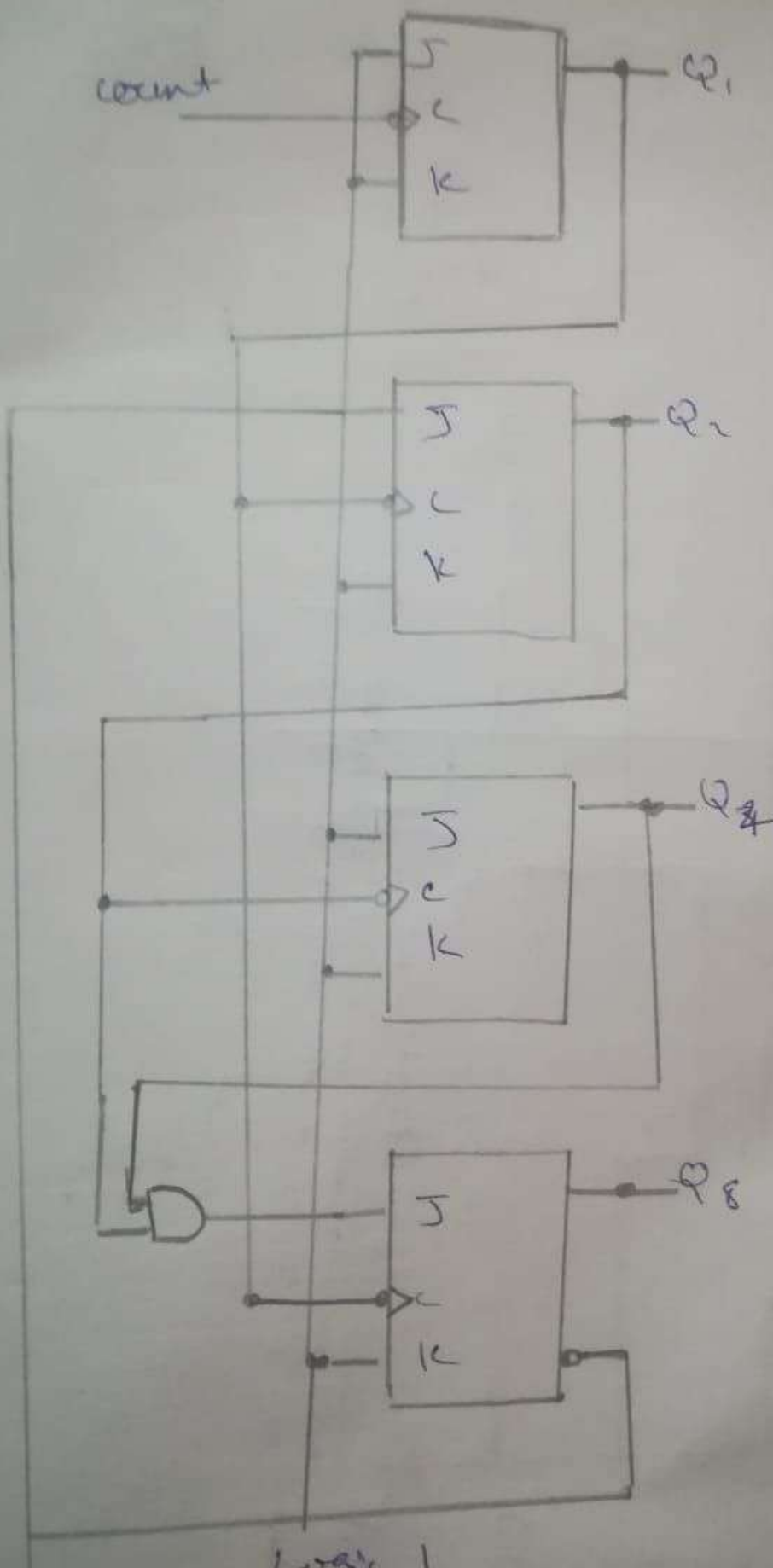


21 Design and implement a BCD ripple counter. Show the complete timing diagram for 12 clock pulse.

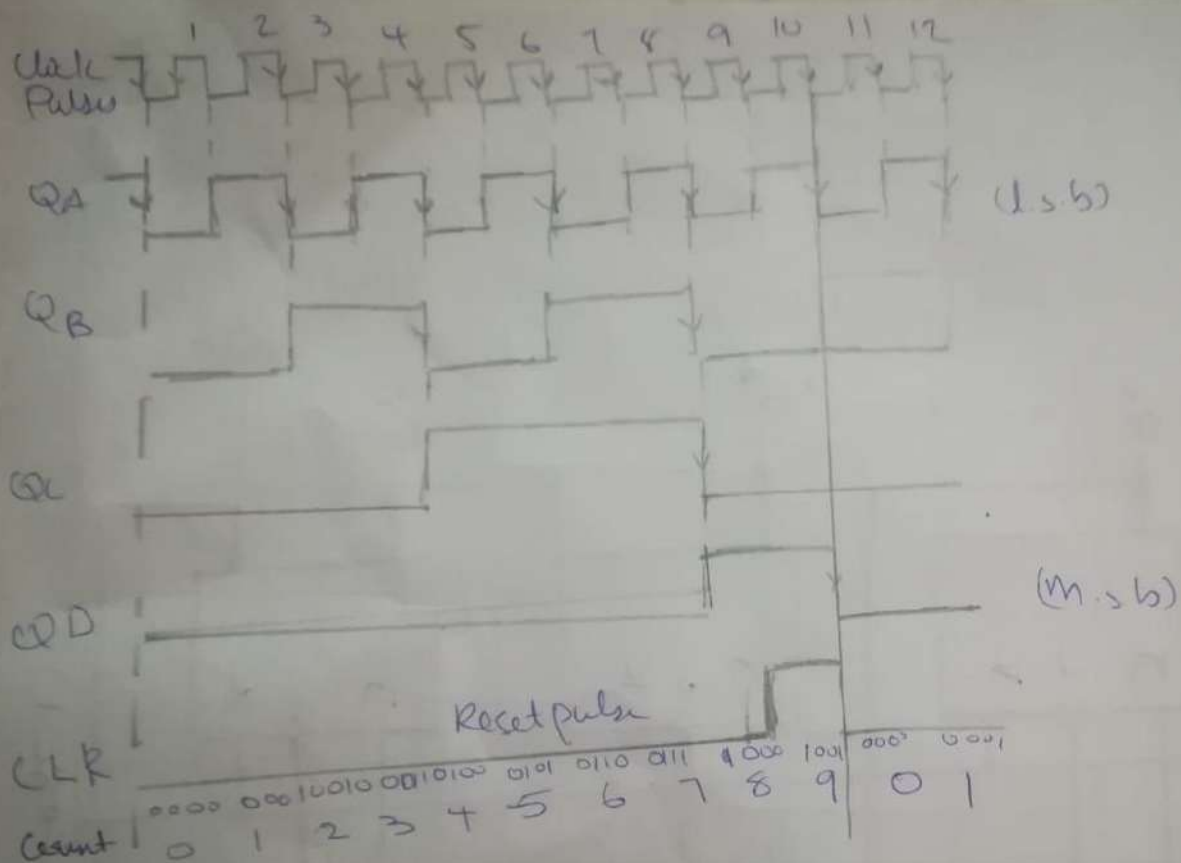
BCD counters a sequence of 10 states using BCD numbers from 0000 to 1001 and repeats.



Clock Count	Output bit patterns				Decimal Value
	Q _D	Q _C	Q _B	Q _A	
1	0	0	0	0	0
2	0	0	0	1	1
3	0	0	1	0	2
4	0	0	1	1	3
5	0	1	0	0	4
6	0	1	0	1	5
7	0	1	1	0	6
8	0	1	1	1	7
9	1	0	0	0	8
10	1	0	0	1	9



Logic 1



by NITHIN P.T
 Rollno: 56
 S31T