

5-13-22

## Homework # 4

6.24

Present State			Next State			T.F.F. F/P		
A	B	C	A	B	C	$T_A$	$T_B$	$T_C$
0	0	0	0	0	1	0	0	1
0	0	1	0	1	1	0	1	0
0	1	1	1	1	1	1	0	0
1	1	1	1	1	0	0	0	1
1	1	0	1	0	0	0	1	0
1	0	0	0	0	0	1	0	0

Don't cares  
010 →

101 →

A \ BC	00	01	11	10
0			1	X
1	1	X		

A \ BC	00	01	11	10
0		1		X
1		X		1

A \ BC	00	01	11	10
0	1			X
1		X	1	

$$T_A = AB' + A'B = A \oplus B \quad T_B = B'C + BC' = B \oplus C \quad T_C = A'C' + AC$$

6.28a

Present State			Next State			F/P to D.F.F.		
A	B	C	A	B	C	$T_A$	$T_B$	$T_C$
0	0	0	0	0	1	0	0	1
0	0	1	0	1	0	0	1	0
0	1	0	1	0	0	1	0	0
0	1	1	X	X	X	X	X	X
1	0	0	1	1	0	1	1	0
1	0	1	X	X	X	X	X	X
1	1	0	0	0	0	0	0	0
1	1	1	X	X	X	X	X	X

A \ BC	00	01	11	10
0			X	1
1	1	X	X	

A \ BC	00	01	11	10
0		1	X	
1	1	X	X	

A \ BC	00	01	11	10
0	1		X	
1		X	X	

$$T_A = A \oplus B$$

$$T_B = AB' + C$$

$$T_C = A'B'C'$$

7.19)  $A(x, y, z) = \sum(1, 3, 5, 6)$

$x \backslash yz$  00 01 11 10

0	0	1	1	2
1	4	5	7	6

$= x'z + y'z + xyz'$

$B(x, y, z) = \sum(0, 1, 6, 7)$

$x \backslash yz$  00 01 11 10

0	0	1	1	3
1	4	5	6	7

$= x'y' + xy$

$C(x, y, z) = \sum(3, 5)$

$x \backslash yz$  00 01 11 10

0	0	1	1	2
1	4	5	7	6

$= xy'z + x'yz$

$D(x, y, z) = \sum(1, 2, 4, 7)$

$x \backslash yz$  00 01 11 10

0	0	1	1	3
1	4	5	6	7

$= xy' + y'z + xz + x'yz'$

PLA programming TABLE

<del>Product Terms</del>	<del>A</del>	<del>B</del>	<del>C</del>				
<del>Product Terms</del>	<del>FIP</del>	<del>o/p</del>					
<del>Product Terms</del>	<del>A</del>	<del>B</del>	<del>C</del>				
Product Terms	X	Y	Z	A	B	C	D
XY	1	1	-	-	1	-	-
X'Z	0	-	1	1	-	-	-
Y'Z	-	0	1	1	-	-	1
X'Y'	0	0	-	-	1	-	-
XY'	1	0	-	-	-	-	1
XZ	1	-	1	-	-	-	1
XY'Z	1	0	1	-	-	1	-
X'YZ	0	1	1	-	-	1	-
X'YZ'	0	1	0	-	-	-	1



7.25

X \ YZ	00	01	11	10
0		1		1
1	1			1

$$A = yz' + xz' + x'y'z$$

X \ YZ	00	01	11	10
0	1	1	1	
1				1

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

X \ YZ	00	01	11	10
0		1		1
1	1		1	1

$$C = yz' + xz' + x'y'z + xy$$

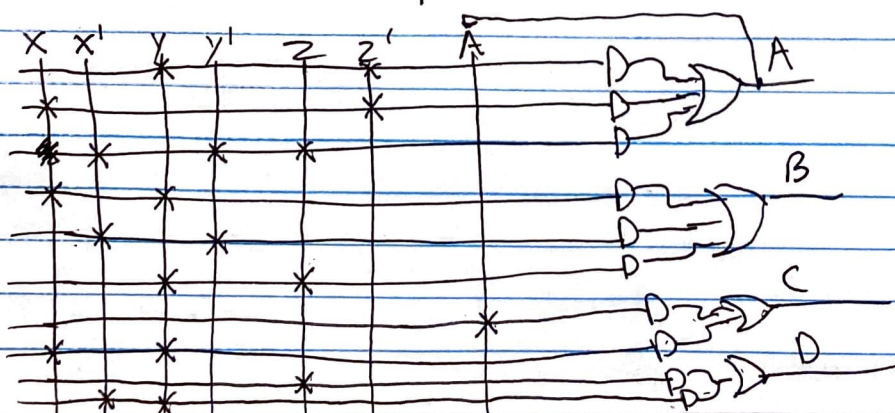
A

X \ YZ	00	01	11	10
0		1	1	1
1	1	1	1	

$$D = z + x'y$$

### PAL Programming Table

I/p to AND Gates				O/p's
X	Y	Z	A	
—	1	0	—	
1	—	0	—	$A = yz' + xz' + x'y'z$
0	0	1	—	
1	1	—	—	
0	0	—	—	$B = xy + x'y' + yz$
—	1	1	—	
—	—	—	1	
1	1	—	—	$C = A + xy$
—	—	1	—	$D = z + x'y$
0	1	—	—	



7.28)  $F_1 = A'B + AC + A'BC'$ ,  $F_2 = (AC + AB + BC)'$   
 $= A'B' + A'C' + C'B'$

