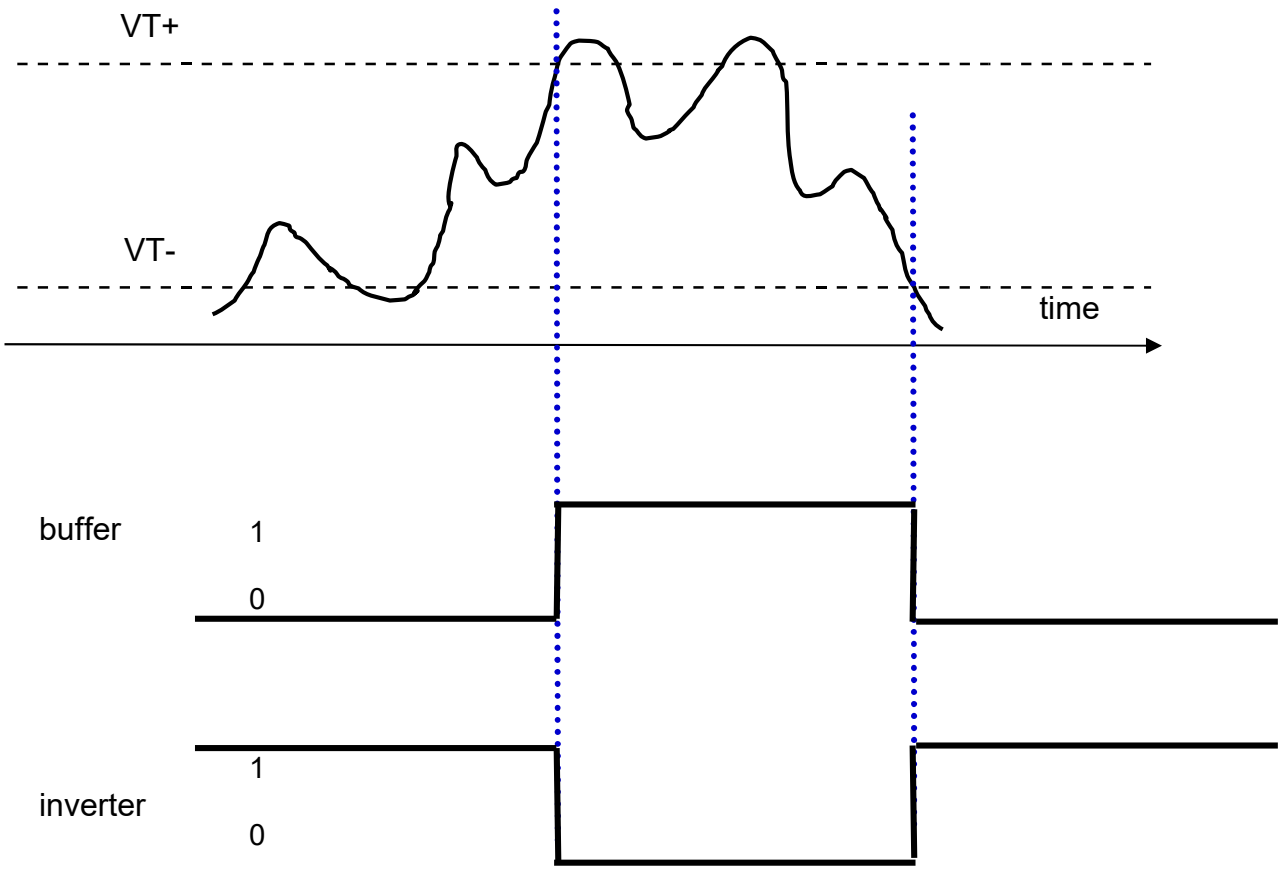
Answers

1



2. Convert the truth table into K-maps. Output x needs 3 products, output y needs 3 products. They share 1 common product (red loop).

x

ab \ cd	00	01	11	10
00	1	1	0	1
01	1	1	0	0
11	0	0	1	1
10	1	0	1	1

y

ab \ cd	00	01	11	10
00	1	0	1	1
01	0	0	1	1
11	1	1	0	0
10	1	1	0	1

x = a'c' + ac + b'd'

P1 = a'c'

P2 = ac

y = ac' + a'c + b'd'

P3 = b'd'

P4 = ac'

P5 = a'c

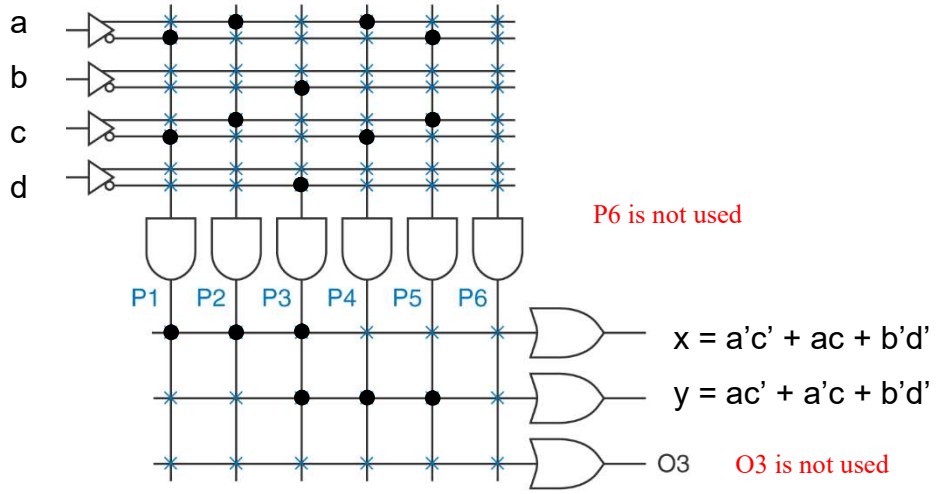


Figure 6-22

Compact representation of a 4 × 3 PLA with six product terms.

3. (a) 0000 0000 0000 0001 which represents 0.0000 0001 (bin)
Or 2^(-8) = 0.00390625 (dec)

(b) 1111 1111 1111 1111 which represents 1111 1111. 1111 1111 (bin) or 255.99609375 (dec) [= 256 - 0.00390625]

(c) 8 (dec) = 1000 (bin)
0.7 (dec) = 0.1011 0011 0011 0011 …. (bin)
But only 8 fractional bits can be retained, the rest have to be discarded
Thus the non-exact representation for 8.7 (dec) is
0000 1000 1011 0011