Problem #1 7-10

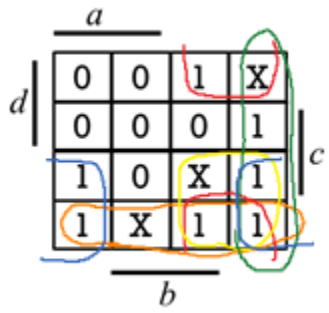
7)

Bar Value	Binary Representation
1.5	0000
2	0001
2.5	0011
3	0010
3.5	0110
4	0111
5	0101
5.5	0100
6	1100
7	1101
8	1111
9	1110

Used gray code because converting from analog to binary signal.

8)

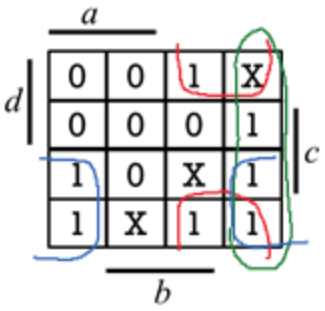
a.



prime implicants:

$\bar{a}\bar{c}, \bar{b}\bar{d}, \bar{a}\bar{b}, \bar{a}\bar{d}, \bar{c}\bar{d}$

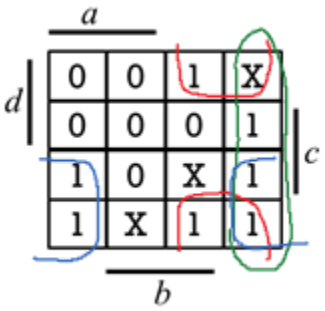
b.



non-essential prime implicants:

$\bar{a}\bar{d}$, $\bar{c}\bar{d}$

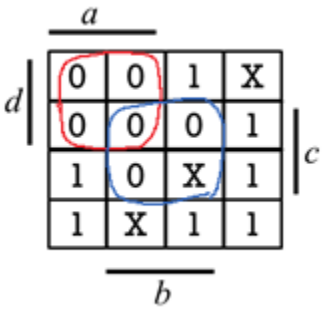
c.



minimum SOP:

$F = \bar{a}\bar{c} + \bar{b}\bar{d} + \bar{a}b$

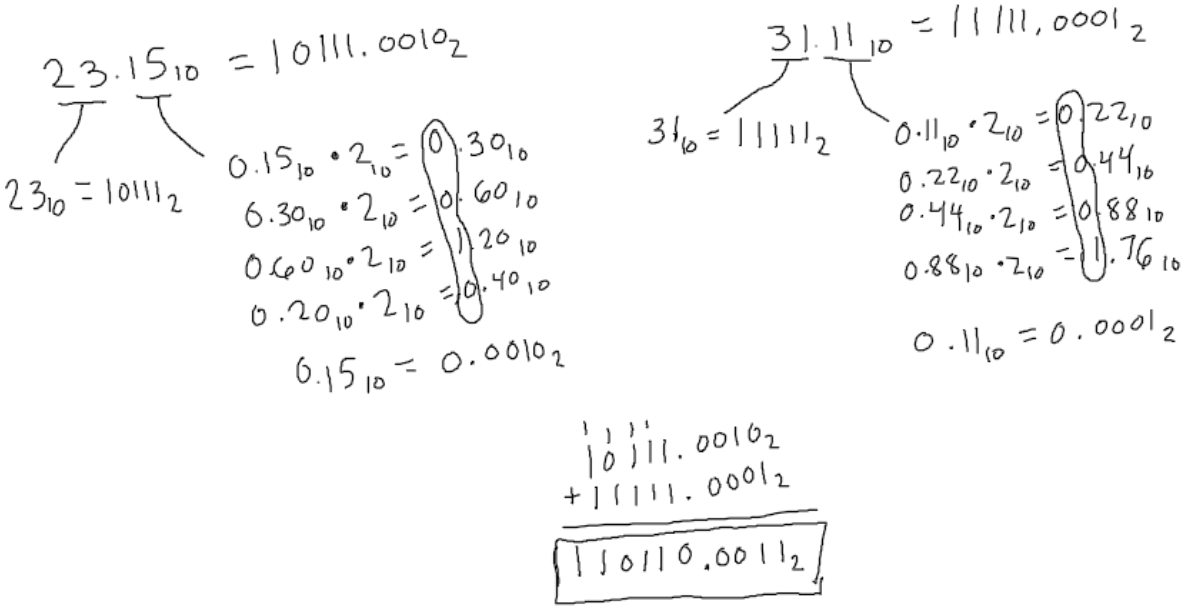
d.



minimum POS:

$F = (\bar{a} + \bar{d})(\bar{b} + \bar{c})$

9)



10)

a)

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$Y = 0$

$Y = 0 \cdot 9_{11} + 4_{11} = 4_{11}$

$Y = 4_{11} \cdot 9_{11} + 7_{11} = 3A_{11}$

$Y = 3A_{11} \cdot 9_{11} + 8_{11} = \boxed{32A_{11}}$

b)