

Cl- Tutorial-6.

Exercise 1

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

(a) Block of 1s: $(\neg a \wedge c) \vee (a \wedge \neg d)$

-- DNF

(b) Block of 0s: $\neg((\neg a \wedge \neg c) \vee (a \wedge d))$

$\Rightarrow (a \vee c) \wedge (\neg a \vee \neg d)$ -- CNF

Exercise 2.

		ab			
		00	01	11	10
r	0	1	0	0	0
	1	0	1	1	1

$$\begin{aligned}
 & (\neg r \wedge \neg a \wedge \neg b) \vee (r \wedge b) \vee (r \wedge a) \\
 &= (\neg r \wedge \neg a \wedge \neg b) \vee (r \wedge (a \vee b)) \\
 &= \neg(r \vee a \vee b) \vee (r \wedge (a \vee b))
 \end{aligned}$$

Exercise 3.

(a) $a \vee \neg b, \neg a \vee \neg d = \neg((\neg a \wedge b) \vee (a \wedge d))$

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

(b) $\varphi = (\neg a \wedge \neg b) \vee (a \wedge \neg d)$

~~I can find. $2^8 - 1 = 255$ different S~~

block of 1 $\rightarrow 8$.

block of 2 $\rightarrow 10$.

block of 4 $\rightarrow 2$

\rightarrow different S $\rightarrow 8+10+2 = 20$.

$\Rightarrow 20 - 1 = 19$.