

✍ Déterminer $\overline{a \oplus b}$ de deux façons différentes.

- $\overline{a \oplus b} = \overline{ab + a\bar{b}} = (a + \bar{b})(\bar{a} + b) = a\bar{a} + a\bar{b} + ab + \bar{b}b = a\bar{b} + ab$
- $\overline{a \oplus b}$ vaut 1 si a et b valent 0 ou si a et b valent 1

✍ Simplifier les expressions suivantes:

$f_1 = \bar{a}b + a$ $f_2 = \bar{a}\bar{c}\bar{d} + \bar{a}b\bar{c} + ab\bar{c} + \bar{c}d\bar{a}$ $f_3 = \bar{c}\bar{d}b + \bar{c}d\bar{a}b + b\bar{c} + abc + \bar{a}bcd$
 f_1 vaut 1 sauf si a et b valent 0 donc $f_1 = a + b$ $f_2 = \bar{c}(\bar{a} + b)$ $f_3 = b$

✍ Ecrire \bar{a} , $a+b$, $a.b$ à l'aide la fonction NAND. Idem avec NOR.

$\bar{a} = \overline{a.a}$ $a + b = \overline{\overline{a+b}} = \overline{\overline{a}. \overline{b}. \overline{b}}$ $a.b = \overline{\overline{a.b}} = \overline{\overline{a}. \overline{b}. \overline{a}. \overline{b}}$
 $\bar{a} = \overline{a+a}$ $a + b = \overline{\overline{a+b}} = \overline{\overline{a+b} + \overline{a+b}}$ $a.b = \overline{\overline{a.b}} = \overline{\overline{a+a} + \overline{b+b}}$

✍ Simplifier $f_7 = \bar{a}b\bar{c} + ab\bar{c} + \bar{a}\bar{b}c + a\bar{b}c$, f_2 et f_3 .

f_7	ab			
	00	01	11	10
c	0	0	1	1
	1	1	0	0

$f_7 = b\bar{c} + \bar{b}c$

f_2	ab			
	00	01	11	10
cd	00	1	1	0
	01	1	1	0
	11	0	0	0
	10	0	0	0

$f_2 = \bar{c}(\bar{a} + b)$

f_3	ab			
	00	01	11	10
cd	00	1	1	0
	01	1	1	0
	11	1	1	0
	10	1	1	0

$f_3 = b$

✍ Déterminer l'équation logique de la fonction f_8 donnée par le tableau de Karnaugh

$\bar{f}_8 = \bar{a}bc$ donc $f_8 = a + \bar{b} + \bar{c}$

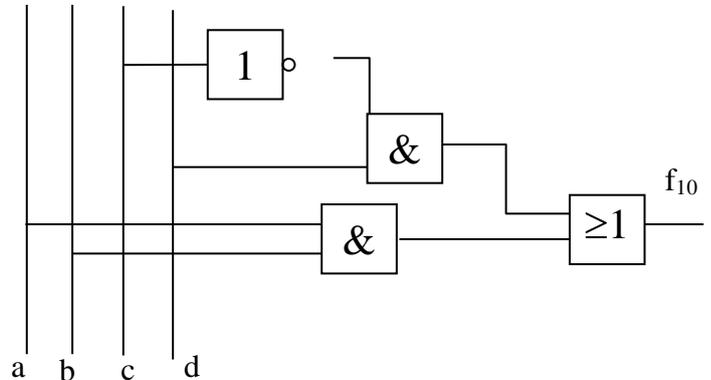
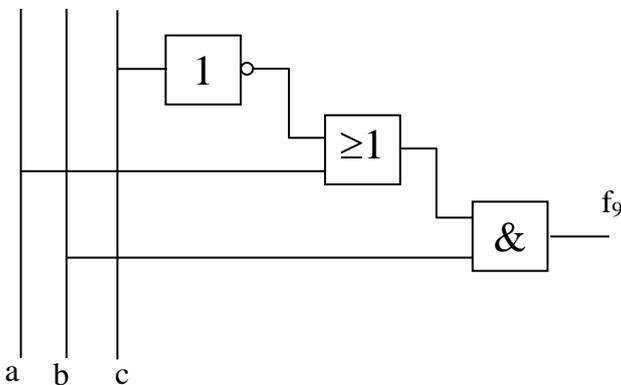
f_8	ab			
	00	01	11	10
c	0	1	1	1
	1	1	0	1

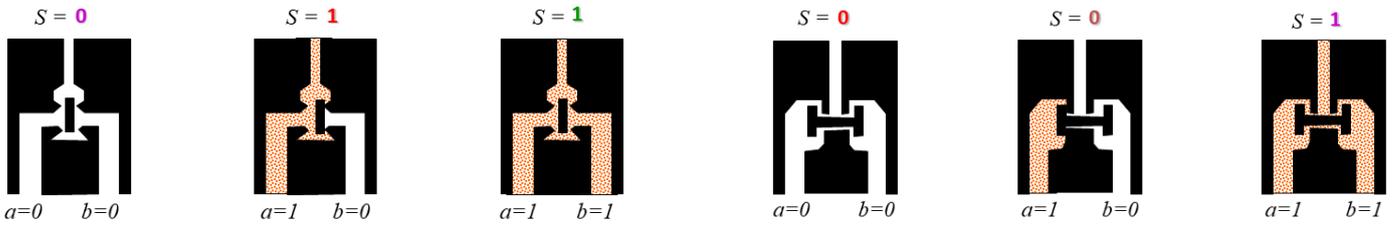
✍ Représenter le logigramme (ou schéma logique) des fonctions suivantes:

$f_9 = (\bar{c}b + a)(c\bar{a} + b)$ et $f_{10} = \overline{\overline{a+b}} + \bar{c}d$

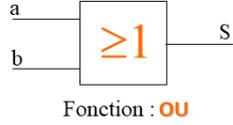
$f_9 = \bar{c}b\bar{c}\bar{a} + a\bar{c}\bar{a} + \bar{c}bb + ab = b(\bar{c} + a)$

$f_{10} = ab + \bar{c}d$

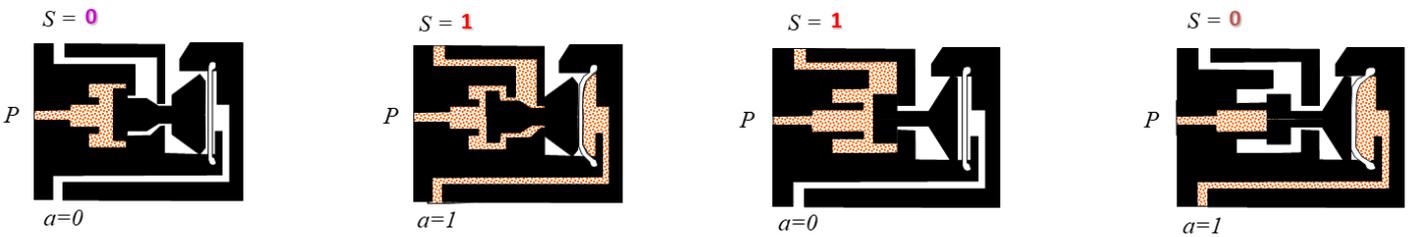
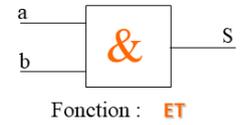




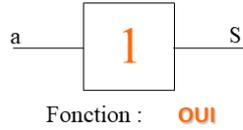
	a	0	1
b	0	0	1
	1	1	1



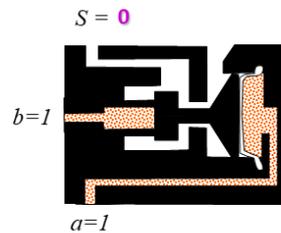
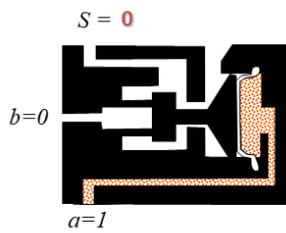
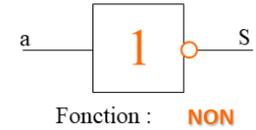
	a	0	1
b	0	0	0
	1	0	1



a	0	1
	0	1



a	0	1
	1	0



	a	0	1
b	0	0	0
	1	1	0

