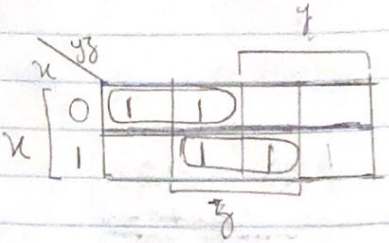
Gbegbe Decalo Jacques Ottawa

#300094197 Devoir 3 ITI 1500

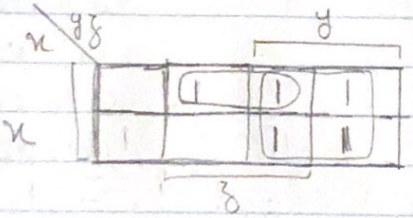
Exercice 3-2

a) $F(x,y,z) = \Sigma(0,1,5,7)$



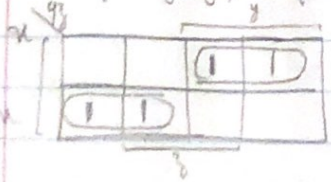
$F = x'y' + xz$

b) $F(x,y,z) = \Sigma(1,2,3,6,7)$



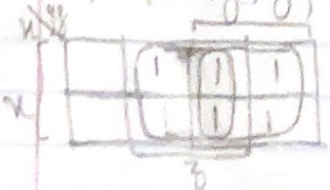
$F = y + x'z$

c) $F(x,y,z) = \Sigma(2,3,4,5)$



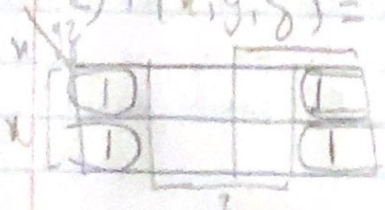
$F = x'y + xy'$

d) $F(x,y,z) = \Sigma(1,2,3,5,6,7)$



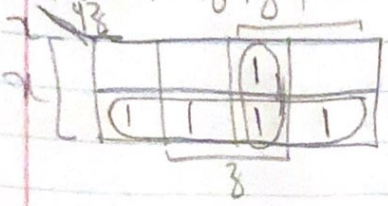
$F = y + z$

e) $F(x,y,z) = \Sigma(0,2,4,6)$



$F = x'z' + xz' \Rightarrow F = z'$

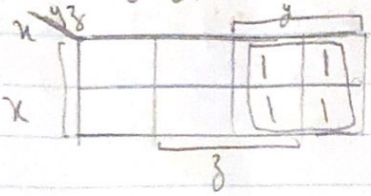
f) $F(x,y,z) = \Sigma(3,4,5,6,7)$



$F = yz + x$

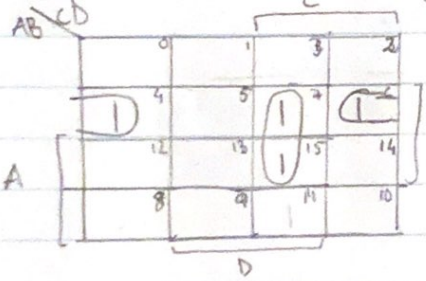
Exercice 3-4

a) $F(x,y,z) = \Sigma(2,3,6,7)$



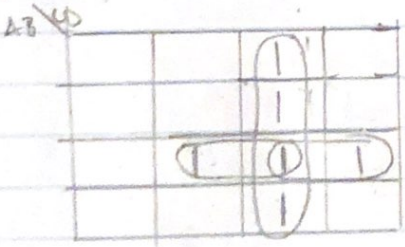
$F = y$

b) $F(A,B,C,D) = \Sigma(4,6,7,15)$



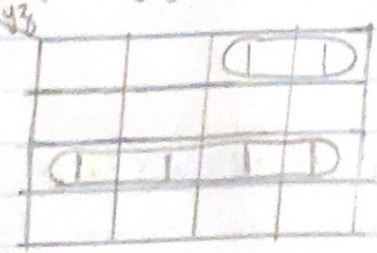
$F = A'BD' + BCD$

c) $F(A,B,C,D) = \Sigma(3,7,11,13,14,15)$



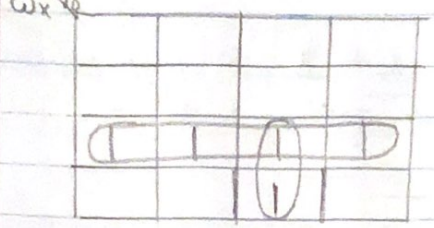
$F = CD + ABD + ABC$

d) $F(wxyz) = \Sigma(2,3,12,13,14,15)$



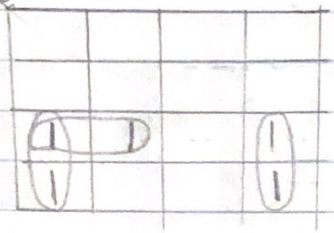
$F = w'x'y + wx$

e) $F(w,x,y,z) = \Sigma(11,12,13,14,15)$



$$F = wx + wyz$$

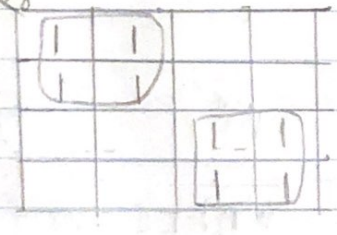
f) $F(w,x,y,z) = \Sigma(8,10,12,13,14)$



$$F = wyz' + wy'z' + wxy'$$

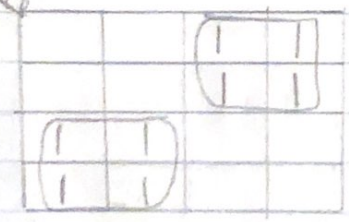
$$F = wz' + wxy'$$

g) $F(w,x,y,z) = \Sigma(0,1,4,5,10,11,14,15)$



$$F = w'y' + wy$$

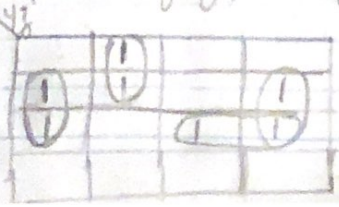
h) $F(w,x,y,z) = \Sigma(2,3,6,7,8,9,12,13)$



$$F = w'y + wy'$$

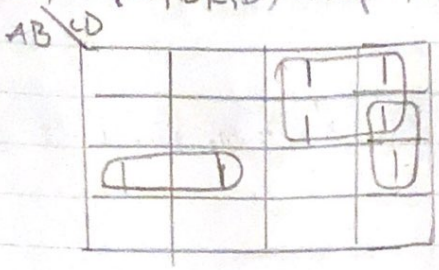
Exercice 3-5

a) $F(w,x,y,z) = \Sigma(1,4,5,6,12,14,15)$



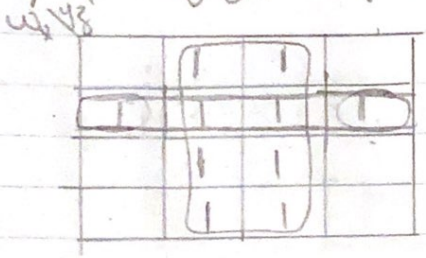
$$F = xz' + wxy + w'y'z$$

b) $F(A,B,C,D) = \Sigma(2,3,6,7,12,13,14)$



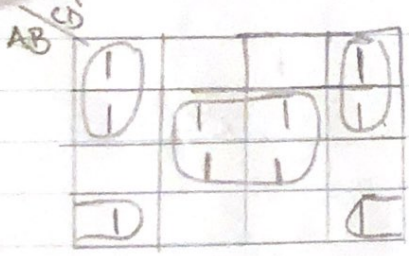
$F = ABC' + A'C + BCD'$

c) $F(w,x,y,z) = \Sigma(1,3,4,5,6,7,9,11,13,15)$



$F = z + w'x$

d) $F(A,B,C,D) = \Sigma(0,2,4,5,6,7,8,10,13,15)$

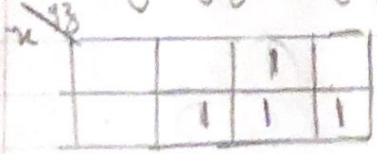


$F = A'C'D' + A'CD' + BD + AB'D'$

$F = A'D' + BD + AB'D'$

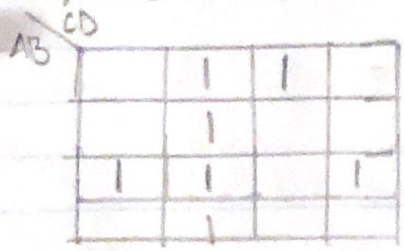
Exercice 3-8

a) $xy + yz + xy'z$



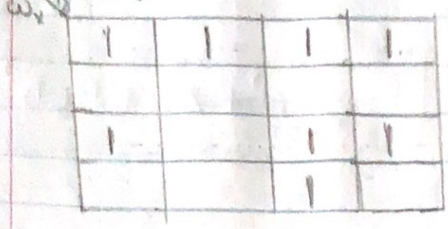
$F = \Sigma(3,5,6,7)$

b) $C'D + ABC' + ABD' + A'B'D$



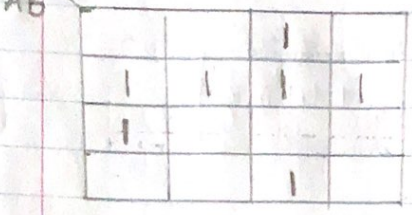
$F = \Sigma(1,3,5,9,12,13,14)$

c) $\omega yz + \omega' x' + \omega x z'$



$$F = \Sigma(0,1,2,3,11,12,14,15)$$

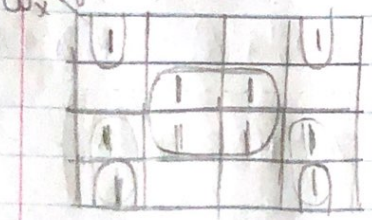
d) $A'B + A'CD + B'CD + BC'D'$



$$F = \Sigma(3,4,5,6,7,11,12)$$

Exercice 3-10

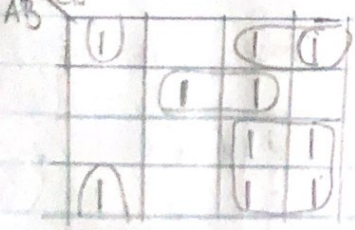
a) $F(\omega,x,y,z) = \Sigma(0,2,5,7,8,10,12,13,14,15)$



Essentiels: xz, $x'z'$

$$F = xz + x'z' + \omega x$$

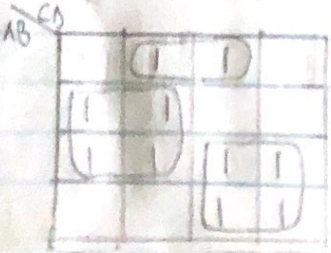
b) $F(A,B,C,D) = \Sigma(0,2,3,5,7,8,10,11,14,15)$



Essentiels: AC, $A'BD$, $B'D'$

$$F = AC + B'D' + A'BD + B'C$$

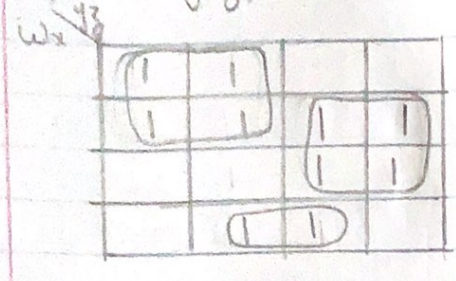
c) $F(A,B,C,D) = \Sigma(1,3,4,5,10,11,12,13,14,15)$



Essentiels: AC, BC'

$$F = BC' + AC + A'B'D$$

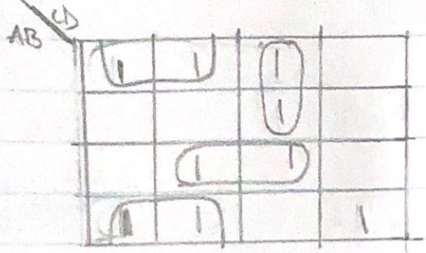
d) $F(w,x,y,z) = \Sigma(0,1,4,5,6,7,9,11,14,15)$



Essentiels : xy , $w'y'$

$F = w'y' + xy + wx'z$

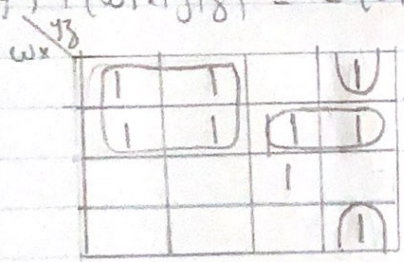
e) $F(A,B,C,D) = \Sigma(0,1,3,7,8,9,10,13,15)$



Essentiels : $B'C'$, $AB'D'$

$F = AB'D' + B'C' + ABD + A'CD$

f) $F(w,x,y,z) = \Sigma(0,1,2,4,5,6,7,10,15)$



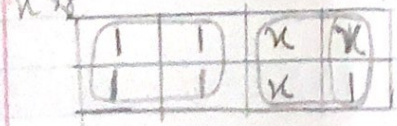
Essentiels : $w'y'$, $x'yz'$, xyz

$F = w'y' + x'yz' + xyz + w'x$

Exercice 3-15

a) $F(x,y,z) = \Sigma(0,1,4,5,6)$

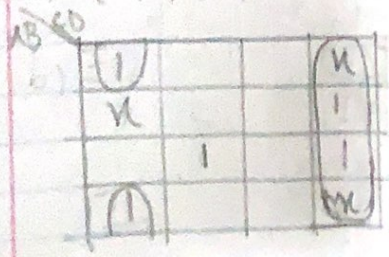
$d(x,y,z) = \Sigma(2,3,7)$



$F = 2^0 = \underline{1}$

$F = \Sigma(0,1,2,3,4,5,6,7)$

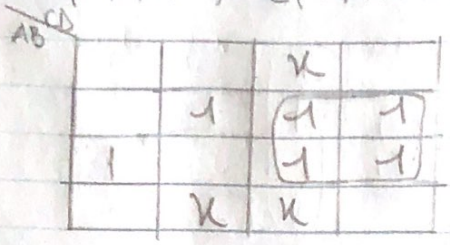
b) $F(A,B,C,D) = \Sigma(0,6,8,13,14)$ $\quad d(A,B,C,D) = \Sigma(2,4,10)$



$F = B'D' + CD' + ABC'D$

$F = \Sigma(0,2,6,8,10,13,14)$

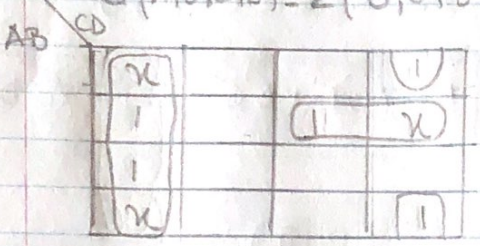
c) $F(A,B,C,D) = \Sigma(5,6,7,12,14,15)$
$d(A,B,C,D) = \Sigma(3,9,11,15)$



$F = BC + ABD' + A'BD$

$F = \Sigma(5,6,7,12,14,15)$

d) $F(A,B,C,D) = \Sigma(4,12,7,2,10)$
$d(A,B,C,D) = \Sigma(0,6,8)$

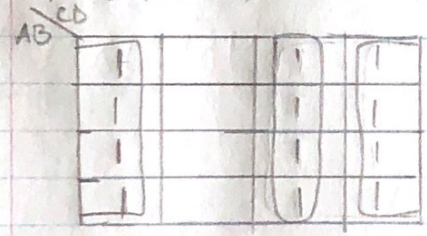


$F = C'D' + B'D' + ABC$

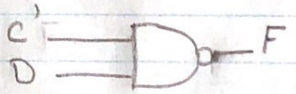
$F = \Sigma(0,2,4,6,7,8,10,12)$

Exercice 3-16

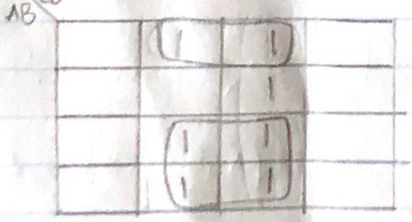
a) $F(A,B,C,D) = AC'D' + A'C + ABC + AB'C + A'C'D'$



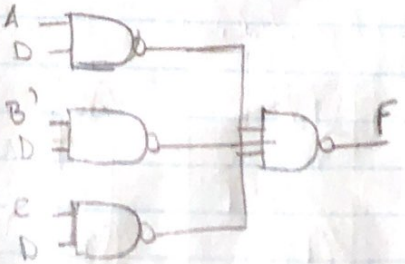
$F = C + D' = (C'D)'$



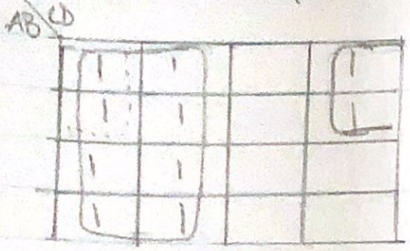
b) $F(A,B,C,D) = A'B'C'D + CD + AC'D$



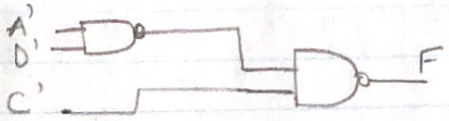
$F = AD + B'D + CD = \left((AD)' + (B'D)' + (CD)'\right)'$



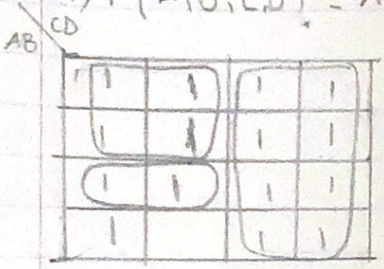
c) $F(A,B,C,D) = (A'+C'+D')(A'+C')(C'+D')$



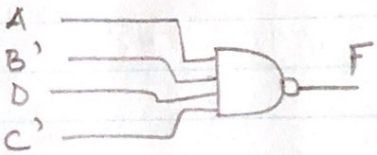
$F = C' + A'D' = (C(A'D')')'$



d) $F(A,B,C,D) = A' + B + D' + B'C$

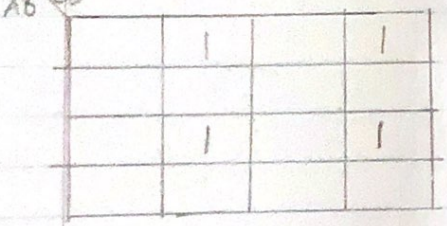


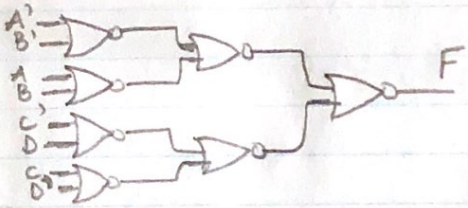
$F = A' + B + D' + C = (AB'DC')'$



Exercice 3-18

a) $F(A,B,C,D) = (A \oplus B)'(C \oplus D)$





$F = (A \oplus B)'(C \oplus D)$
$= (A'B + AB')'(CD' + C'D)$
$= ABCD' + ABC'D + A'B'CD' + A'B'C'D$

$F = (AB + A'B')'(CD' + C'D)'$
$= ((A'+B')'(A+B)')'(C'+D)'(C+D')')'$

b) $F = (AB + A'B')(C'D + CD')$

$= (((AB)'(A'B')')'((C'D)'(CD')')')'$

$F = (((AB)'(A'B')')'((C'D)'(CD')')')'$