

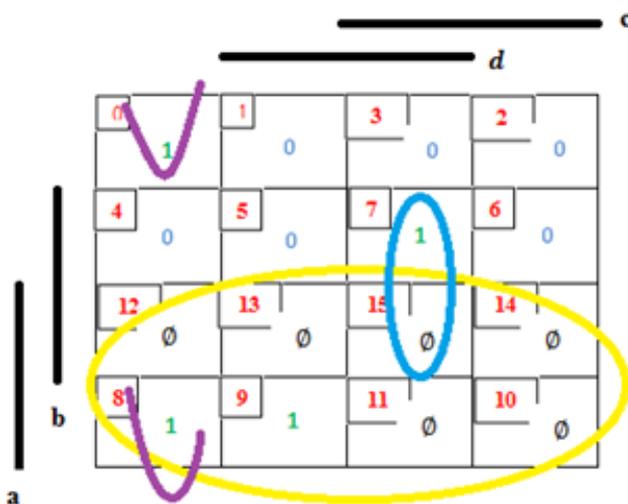


## Correction \_Travaux dirigés N°3

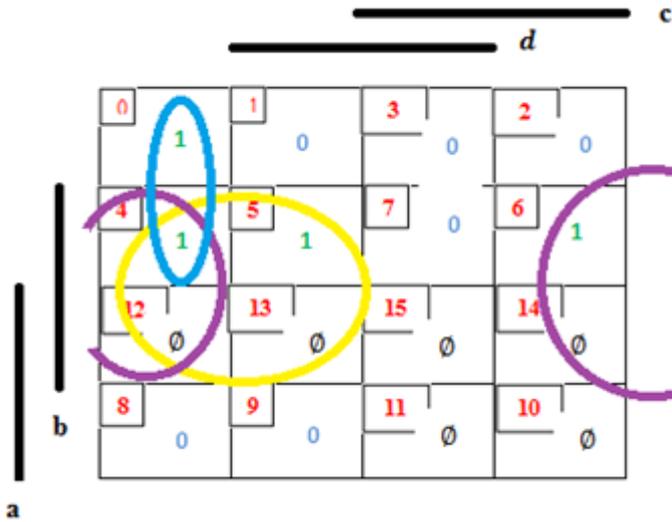
### Les circuits combinatoires de transcodage

**Exercice N°1** : Réalisation d'un transcodeur DCB vers codes 2 parmi 5 :

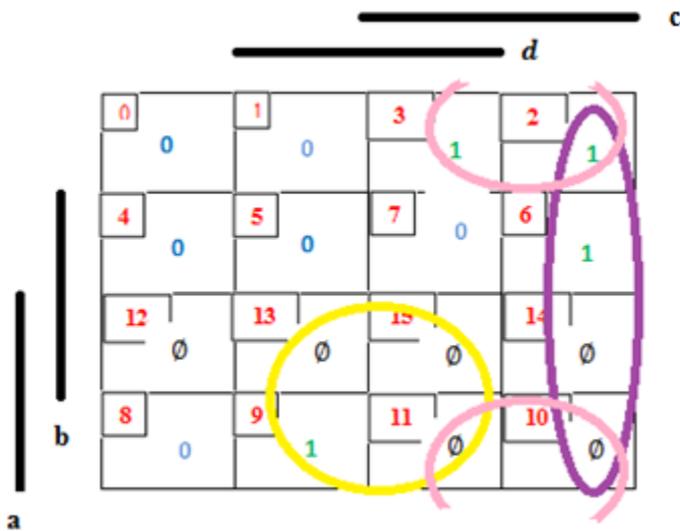
n°	abcd	ABCDE
0	0000	11000
1	0001	00011
2	0010	00101
3	0011	00110
4	0100	01001
5	0101	01010
6	0110	01100
7	0111	10001
8	1000	10010
9	1001	10100



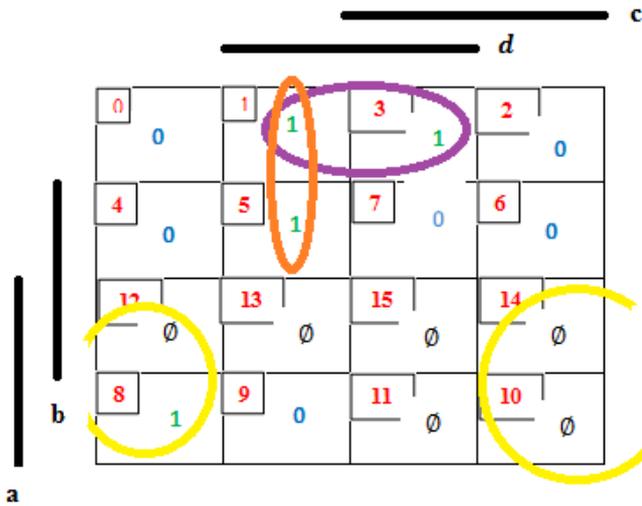
$$A = a + cdb + \bar{c}\bar{d}\bar{b}$$



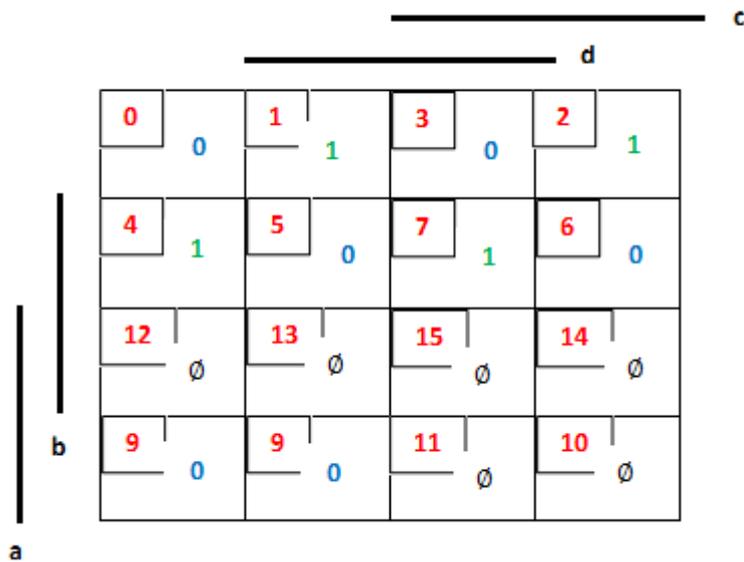
$$B = \bar{c}\bar{d}\bar{a} + b\bar{d} + \bar{c}b$$



$$C = ad + \bar{b}c + \bar{d}c$$



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

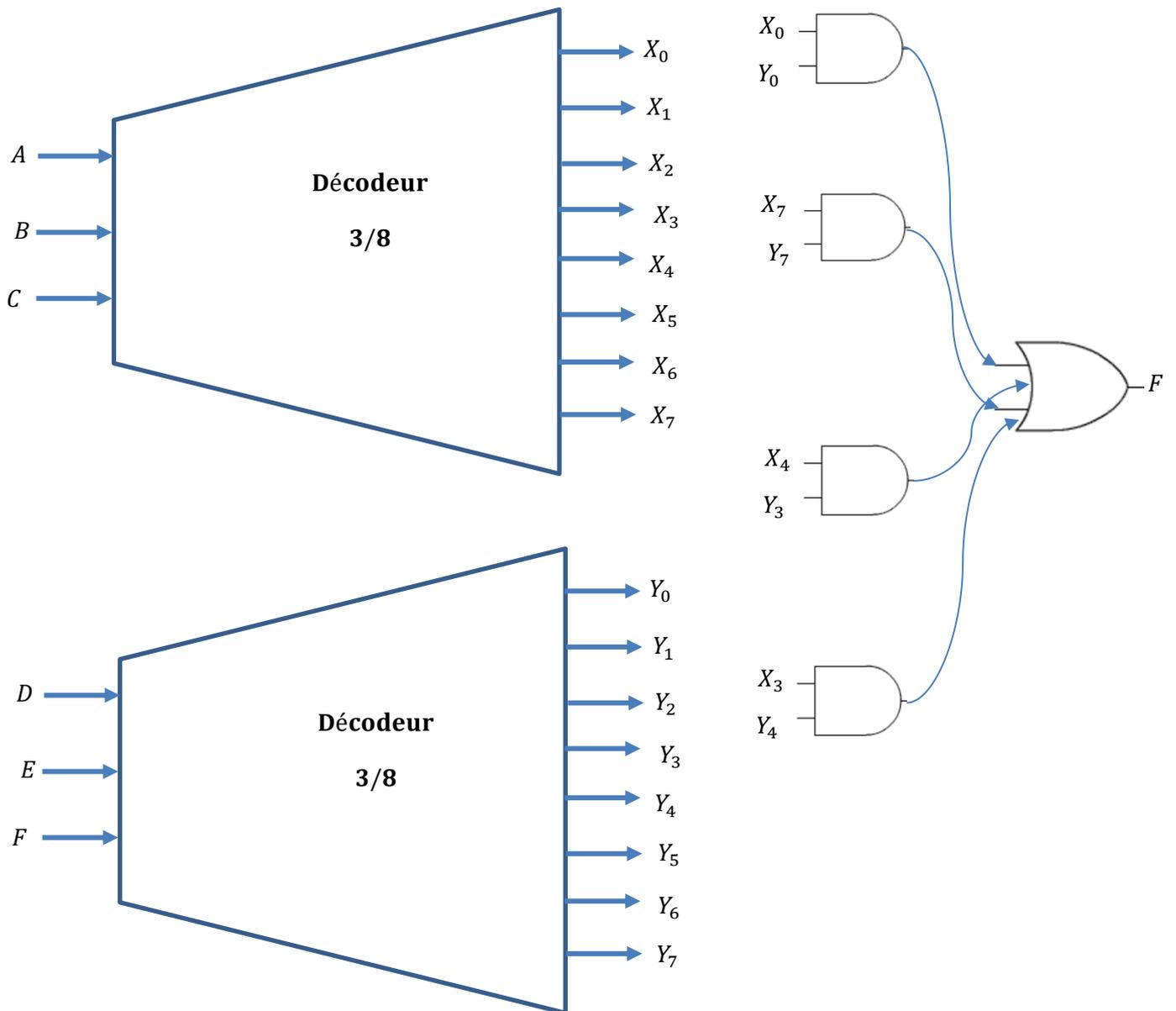


$$\begin{aligned}
 E &= \bar{a}\bar{b}d\bar{c} + \bar{a}\bar{b}c\bar{d} + \bar{a}b\bar{d}\bar{c} + \bar{a}bdc = \bar{a}\bar{b}(d\bar{c} + c\bar{d}) + \bar{a}b(\bar{d}\bar{c} + dc) \\
 &= \bar{a}\bar{b}(d \oplus c) + \bar{a}b(\overline{d \oplus c}) = \bar{a}(\bar{b}(d \oplus c) + b\overline{(d \oplus c)}) = \bar{a}(b \oplus d \oplus c)
 \end{aligned}$$



**Exercice N°2 : F par deux Décodeurs à 3entrées et 8 sorties**

$$F = \overline{A}\overline{B}\overline{C}\overline{D}\overline{E}\overline{F} + ABCDEF + \overline{A}\overline{B}CDEF + ABC\overline{D}\overline{E}F$$





**Exercice N°4 :** Utiliser un décodeur pour réaliser les fonctions suivantes

1.  $F_1 = A B \bar{C} D + A B C \bar{D}$
2.  $F_2 = \bar{A} \bar{B} \bar{C} \bar{D} + A B C D + A \bar{B} \bar{C} D$
3.  $F_3 = \bar{A} B C D$
4.  $F_4 = \bar{A} \bar{B} \bar{C} D$

