MANIPULATION n° 3 : Les fonctions de base

(Temps prévu: 1 séances de 3 heures)

I. BUT

Réaliser et vérifier les fonctions de bases, à l'aide de NAND2 :

- fonction OR
- fonction NOR
- fonction XOR
- fonction XNOR .

II. Rappel Théorique

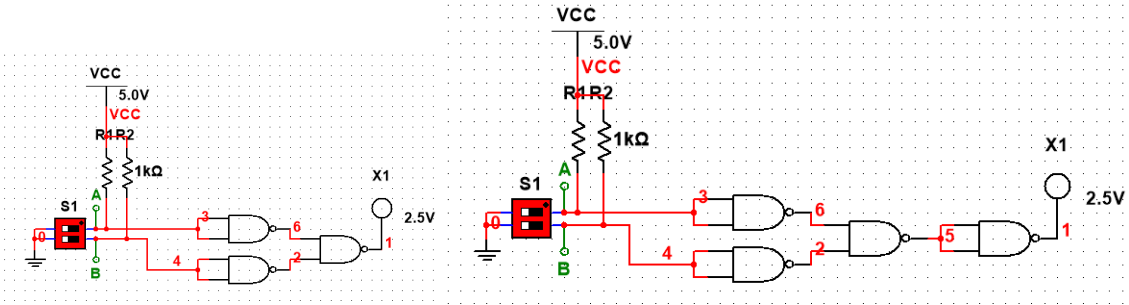
Pouvoir donner la table de vérité ainsi que l'équation logique des fonctions OR,NOR, XOR, XNOR

Connaître les notes du cours de labo de la jusqu' à la page 23.

III. Manipulation

1. La fonction OR et la fonction NOR

Réaliser le schéma de la fonction OR et NOR à l'aide de portes NAND à 2 entrées.



OR **NOR**

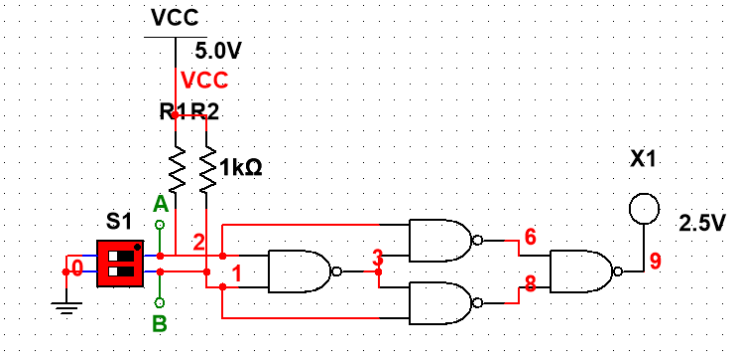
Câbler ou simuler cette fonction, et vérifier la TDV

A	B	A + B	$\overline{A+B}$
0	0	0	1
0	1	1	0
1	0	1	0
1	1	1	0

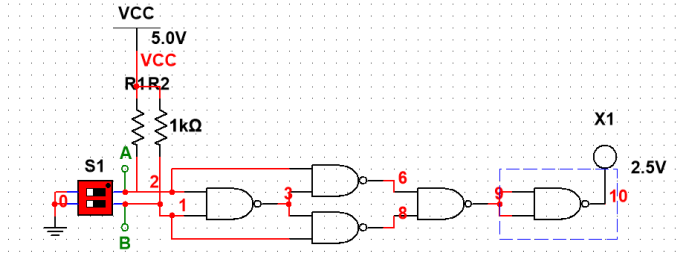
2. La fonction XOR et la fonction XNOR

Réaliser le schéma de la fonction XOR et XNOR à l'aide de portes NAND à 2 entrées.

XOR



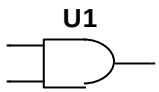
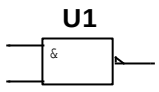
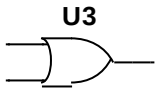
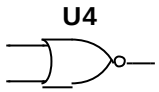
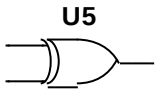
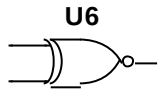
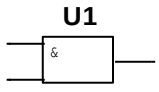
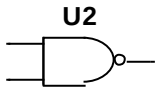
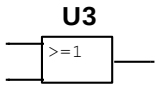
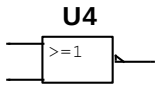
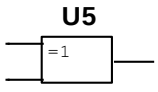
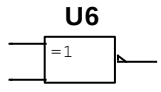
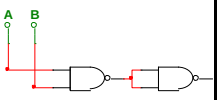
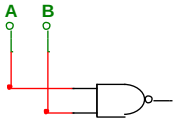
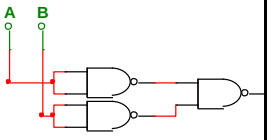
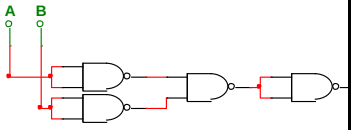
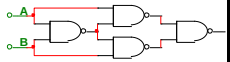
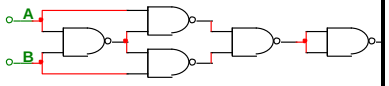
XNOR



Câbler ou simuler cette fonction, et vérifier la TDV

A	B	A⊕B	$\overline{A \oplus B}$
0	0	0	1
0	1	1	0
1	0	1	0
1	1	0	1

IV. Conclusion : compléter le tableau suivant en norme européenne et en norme américaine

A	B	AND	NAND	OR	NOR	XOR	XNOR
0	0	0	1	0	1	0	1
0	1	0	1	1	0	1	0
1	0	0	1	1	0	1	0
1	1	1	0	1	0	0	1
Symbole Euro							
Symbole USA							
Schéma NAND2							
Équation		F=A*B	F=(A*B)'	F=A+B	F=(A+B)'	F=A⊕ B	F=(A⊕ B)'