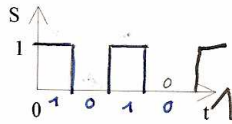
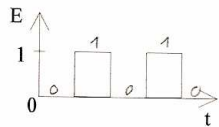
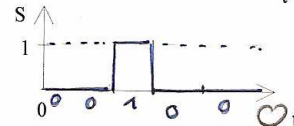
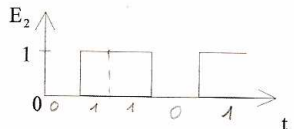
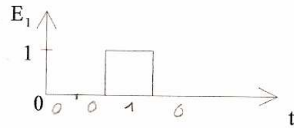


Exercices et applications avec les portes logiques

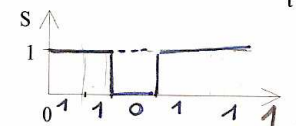
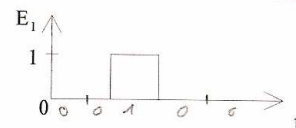
Exercices



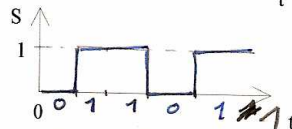
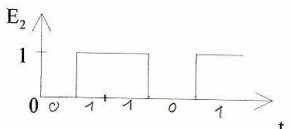
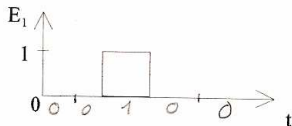
Porte NON



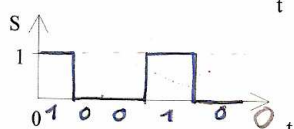
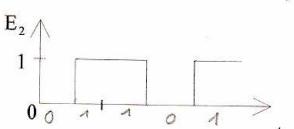
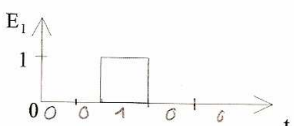
Porte ET



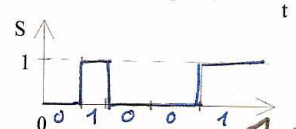
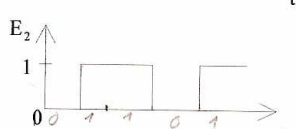
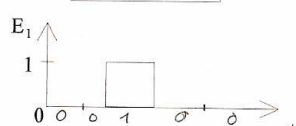
Porte NON ET



Porte OU

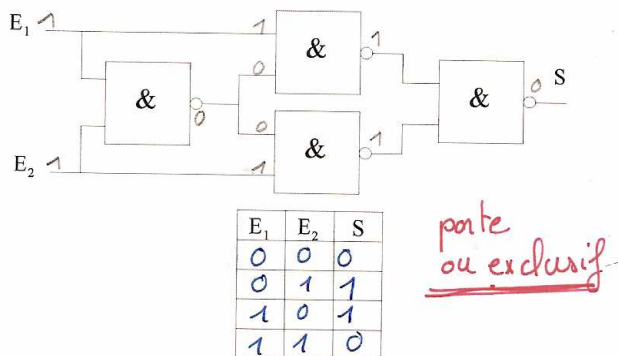
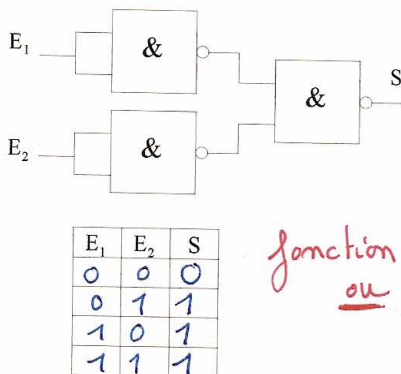
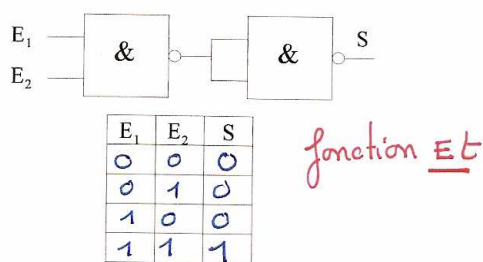
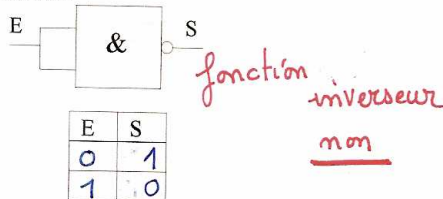


Porte NON OU

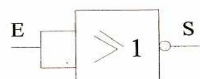


Porte OU exclusif

Etablir la table de vérité des montages suivants. Quelle est la fonction réalisée pour chaque montage ? Conclusion.

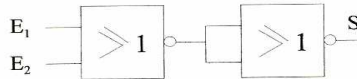


3°) Mêmes questions pour les montages ci-dessous :



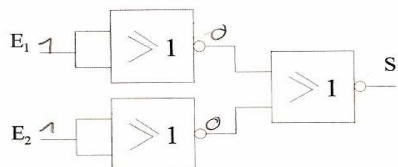
E	S
1	0
0	1

Porte NON



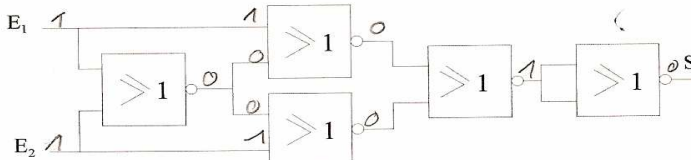
E ₁	E ₂	S
0	0	0
0	1	1
1	0	1
1	1	1

porte ou



E ₁	E ₂	S
0	0	0
0	1	0
1	0	0
1	1	1

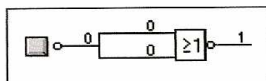
porte ET



E ₁	E ₂	S
0	0	0
0	1	1
1	0	1
1	1	0

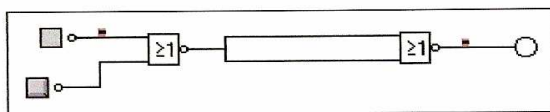
porte ou exclusif

Exercices sur les portes logiques :



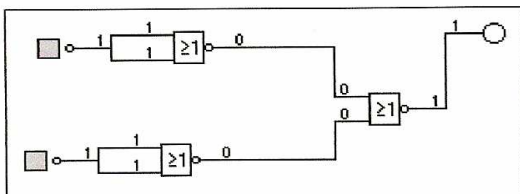
E	S
0	1
1	0

fonction **NON**



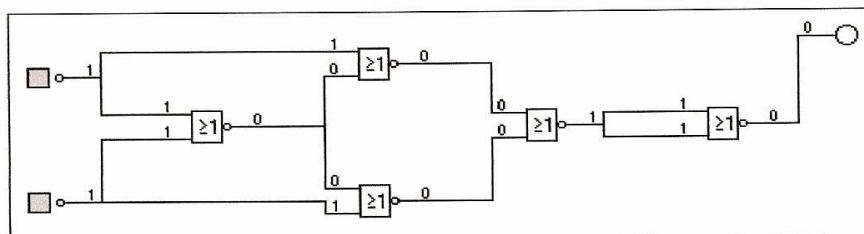
E1	E2	S
0	0	0
0	1	1
1	0	1
1	1	1

fonction **OU**



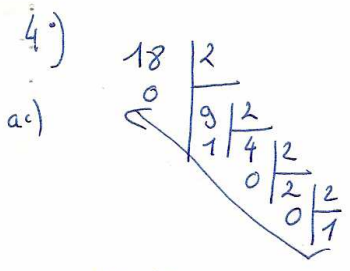
E1	E2	S
0	0	0
0	1	0
1	0	0
1	1	1

fonction **ET**

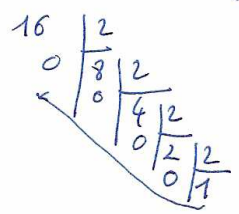


E1	E2	S
0	0	0
0	1	0
1	0	1
1	1	0

fonction **OU EXCLUSIF**



$$10010 \quad (2^0 \times 1 \times 2^1 + 0 \times 2^2 + 0 \times 2^3 + 1 \times 2^4) + 16$$



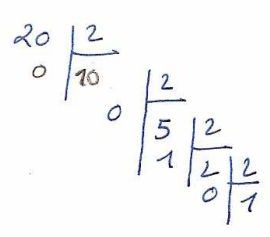
$$10000 \quad (0 \times 2^0 + 0 \times 2^1 + 0 \times 2^2 + 0 \times 2^3 + 1 \times 2^4)$$

18 ET 16

E ₁	1	0	0	1	0
E ₂	1	0	0	0	0
S	1	0	0	0	0

18 ET 16 = 16 ✓

18 : 10010



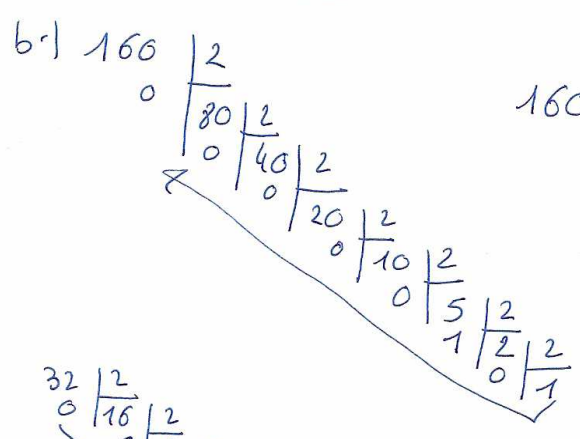
18

1	0	0	1	0	E ₁
1	0	1	0	0	E ₂
1	0	1	1	0	S

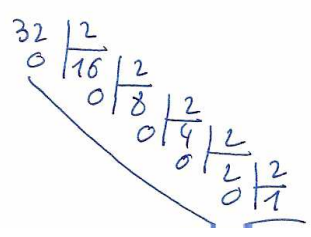
$$0 \times 2^0 + 1 \times 2^1 + 1 \times 2^2 + 0 \times 2^3 + 1 \times 2^4$$

$$2 + 4 + 0 + 16 = 22$$

18 OU 20 = 22. ✓



160 : 1 0 1 0 0 0 0 0



32 : 1 0 0 0 0 0

160: 32

E ₁	1	0	1	0	0	0	0	0
E ₂			1	0	0	0	0	0
S	0	0	1	0	0	0	0	0

160 Et 32

résultat 32

160 32

E ₁	1	0	1	0	0	0	0	0
E ₂	0	0	1	0	0	0	0	0
S	1	0	1	0	0	0	0	0

160 ou 32

résultat: 160

c) 157

157	2
1	78
0	39
1	19
1	9
1	4
0	2
0	1

157: 1 0 0 1 1 1 0 1

185

185	2
1	92
0	46
0	23
1	11
1	5
1	2
0	1

185: 1 0 1 1 1 0 0 1

157	E ₁	1	0	0	1	1	1	0	1
185	E ₂	1	0	1	1	1	0	0	1
	S	1	0	0	1	1	0	0	1

157 Et 185 : $1 \times 2^7 + 0 \times 2^6 + 0 \times 2^5 + 1 \times 2^4 + 1 \times 2^3$

11
153

16
8
+ 1
+ 0
+ 0
+ 1
1

157	E_1	1	0	0	1	1	1	0	1
185	E_2	1	0	1	1	1	0	0	1
	S	1	0	1	1	1	1	0	1

$$= \overset{128}{1 \times 2^7} + 0 \times 2^6 + \overset{32}{1 \times 2^5} + \overset{16}{1 \times 2^4} + \overset{8}{1 \times 2^3} + \overset{4}{1 \times 2^2} + 0 \times 2^1 + \overset{1}{1 \times 2^0}$$

157 ou 185 = 189

II- Quelques montages avec les portes logiques:

1°)

E_1	E_2	Décimal
0	0	0
1	0	1
0	1	1
1	1	2

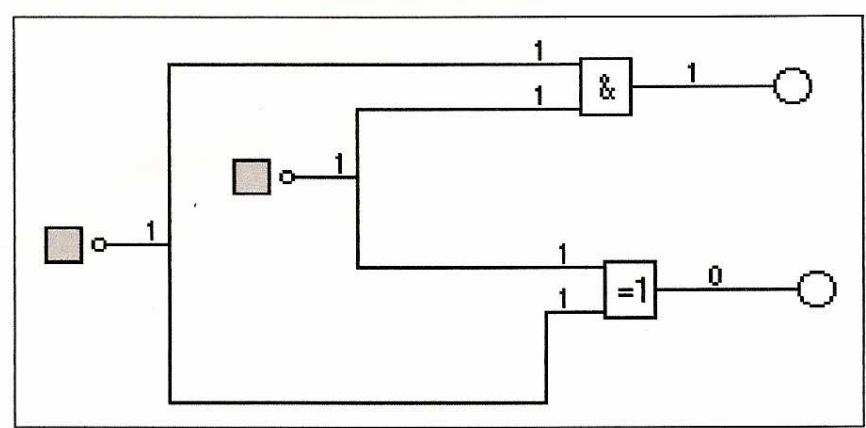
2°) en binaire: $2^0 = 1$
 $2 = 1 \times 2^1$

E_1	E_2	S_1	S_0
0	0	0	0
0	1	0	1
1	0	0	1
1	1	1	0

ET : OU EXCLUSIF

3°) Au vue des résultats des portes S_1 et S_0 il faut une porte ET (correspondant à la sortie S_1) et une porte OU EXCLUSIF pour la sortie S_0 .

Addition de deux bits de même rang



E_1	E_2	S_1	S_0
0	0	0	0
0	1	0	1
1	0	0	1
1	1	1	0