

1) $A \text{ OR } (\text{NOT}(A) \text{ AND } B)$ e' uguale a $A \text{ XOR } B$

A	B	NOT A	NOT(A) AND B	A OR (1A AND B)
0	0	1	0	0
0	1	1	1	1
1	0	0	0	1
1	1	0	0	1

A	B	A XOR B
0	0	0
0	1	1
1	0	1
1	1	0

FALSE

2) $\text{NOT}(A) \text{ OR } (\text{NOT}(A \text{ OR } B)) = \bar{A}$

↓

$\bar{A} + \overline{A+B} \rightarrow \bar{A} + (\bar{A}\bar{B}) \Rightarrow \bar{A}$ TRUE

3) $(A \text{ AND } \text{NOT}(B)) \text{ OR } (A \text{ AND } C) = A \text{ AND } (B \text{ OR } \text{NOT}(C))$

A	B	C	7B	A AND B	A AND C	XVY	7C	BY7C	A AND Z
0	0	0	1	0	0	0	1	1	0
0	0	1	1	0	0	0	1	1	0
0	1	0	0	0	0	0	1	1	0
0	1	1	0	0	0	0	1	1	1
1	0	0	1	1	1	1	0	0	0
1	0	1	1	1	1	1	0	0	0
1	1	0	0	0	0	0	1	1	1
1	1	1	0	0	1	1	0	1	1

FALSE

• IDENTITY LAW

AND form

$$1A = A$$

• NULL LAW

$$0A = 0$$

• IDEMPOTENT LAW

$$AA = A$$

• INVERSE LAW

$$A\bar{A} = 0$$

• COMMUTATIVE LAW

$$AB = BA$$

• ASSOCIATIVE LAW

$$(AB)C = A(BC)$$

• DISTRIBUTIVE LAW

$$A+BC = (A+B)(A+C)$$

• ABSORPTION LAW

$$A(A+B) = A$$

• DE MORGAN'S LAW

$$\overline{AB} = \bar{A} + \bar{B}$$

OR form

$$0+A = A$$

$$1+A = 1$$

$$A+A = A$$

$$A+\bar{A} = 1$$

$$A+B = B+A$$

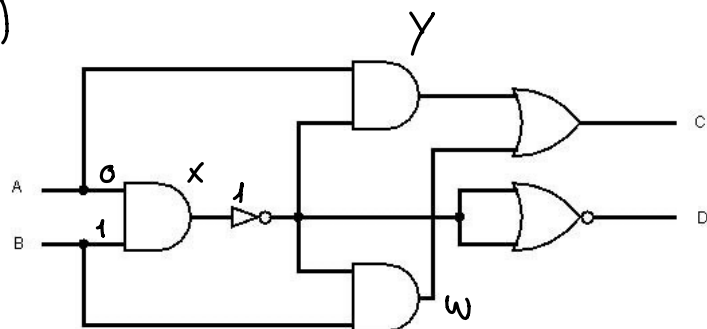
$$(A+B)+C = A+(B+C)$$

$$A(B+C) = AB+AC$$

$$A+AB = A$$

$$\overline{A+B} = \bar{A}\bar{B}$$

10)



A	B	X	\bar{X}	Y	W	C
0	0	0	1	0	0	0
0	1	0	1	0	1	1
1	0	0	1	1	0	1
1	1	1	0	0	0	0

$(\text{NOT}(A) \text{ AND } B) \text{ OR } (A \text{ AND } \text{NOT}(B))$

A	B	C
0	0	0
0	1	1
1	0	1
1	1	0

$(\text{NOT}(A) \text{ AND } B) \text{ OR } (A \text{ AND } \text{NOT}(B))$

11)

A	B	D
0	0	0
0	1	0
1	0	0
1	1	1

A AND B

A	B	X	\bar{X}	D
0	0	0	1	0
0	1	0	1	0
1	0	0	1	0
1	1	1	0	1

A AND B

12)

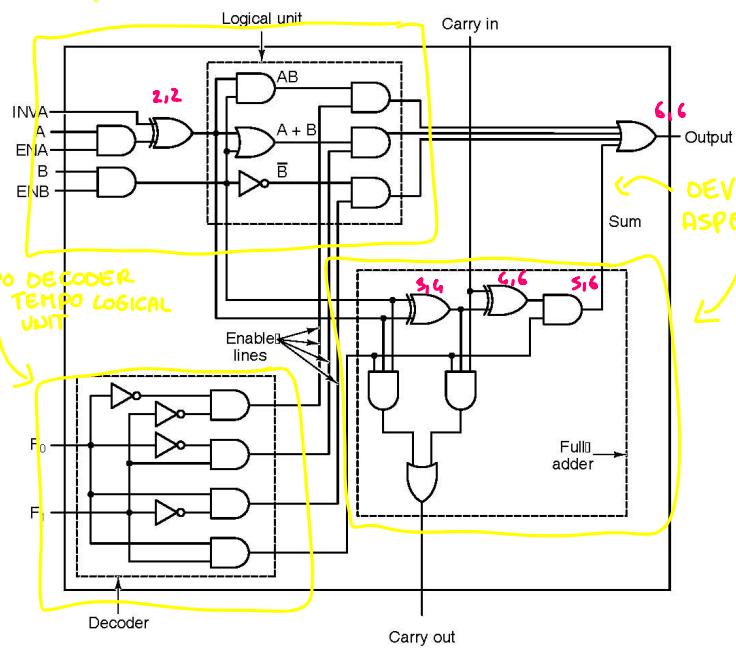
TROVA IL PIÙ LENTO

NOT = 0,6 msec
AND=OR = 1 msec
XOR = 1,2 msec

TEMPO DECODER
« TEMPO LOGICAL UNIT

DEVI COMUNQUE ASPETTARE CHE

la logical unit lavora in parallelo al decoder, quindi siccome la prima e' più lenta prendo come t. exec. max quello della logical unit



PARTE 2

A	B	C	D	E
0	0	0	1	1
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	0	0

D. $(\bar{A}\bar{B}\bar{C}) + (\bar{A}\bar{B}C) + (\bar{A}B\bar{C}) + (A\bar{B}\bar{C})$

E. $(\bar{A}\bar{B}\bar{C}) + (\bar{A}B\bar{C}) + (A\bar{B}\bar{C}) + (AB\bar{C})$

