

laboratorul nr. 5:

$$111 = 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 = 7$$

CBA      4      2      1

MSB      LSB

MUX:  $S=0 \Rightarrow \text{OUT}=A$   
 $S=1 \Rightarrow \text{OUT}=B$

1a)

S	B	A	OUT
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	1
-----			
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	1



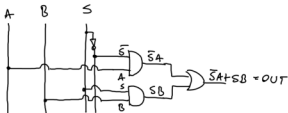
$T_1 = A\bar{S}$   
 $T_2 = SB$

$\text{OUT} = T_1 + T_2 = \bar{S}A + SB$

1x NOT  
 1x OR  
 2x AND

S	B	A	OUT
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	1
-----			
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	1

Schema cu porți:



Tabloul de adevăr completat pe baza măsurătorilor

S	B	A	OUT
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	1
-----			
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	1

OUT măsurat = OUT teoretic  
 $\Downarrow$   
 multiplexorul funcționează corect

1b)

$A = 1001$   
 $B = 0110$

pe baza măsurătorilor  
 $\downarrow$   
 Dacă  $S=0 \rightarrow \text{OUT}=? \Rightarrow \text{OUT}=A$   
 $S=1 \rightarrow \text{OUT}=?$

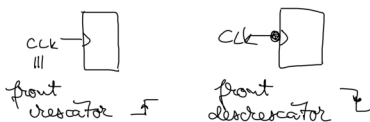
A	B	S	OUT
1001	0110	0	1001 = A
1001	0110	1	0110 = B

1c)

MUX 4x1

OUT = SOP

$\text{OUT} = A\bar{S}_2\bar{S}_1 + B\bar{S}_2S_1 + CS_2\bar{S}_1 + DS_2S_1$



$\bar{Q} \equiv Q'$   
 $\bar{A}\bar{B}CD \equiv A'B'CD$

4)

Decoder BCD - zecimal

2 biti  $\rightarrow$  4 valori  
 0, 1, 2, 3.

A	B	OUT (zecimal) $\rightarrow$ LED
00		0 OUT1
01		1 OUT2
10		2 OUT3
11		3 OUT4

OUT1  $\equiv$  SOP  
 $\text{OUT}_1 = \bar{A}\bar{B}$   
 $\text{OUT}_2 = \bar{A}B$   
 $\text{OUT}_3 = A\bar{B}$   
 $\text{OUT}_4 = AB$

4x AND.

