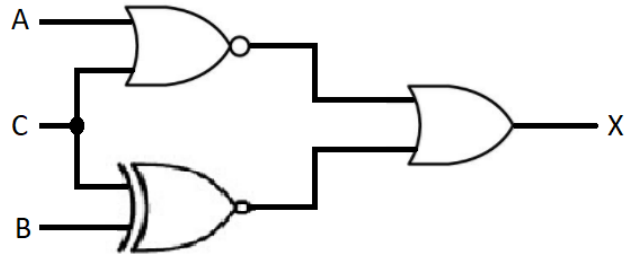
SEL0414 - Sistemas Digitais
Resolução Lista 4 - Circuitos Combinacionais

01

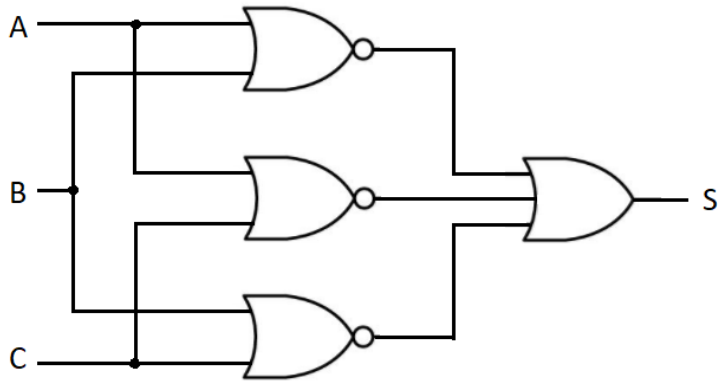
$X = \overline{ABC}+\overline{A}B\overline{C}+\overline{A}BC+A\overline{BC}+ABC = \overline{BC}(\overline{A}+A)+BC(\overline{A}+A)+\overline{A}B\overline{C} = \overline{BC}+BC+\overline{A}B\overline{C} = \overline{C}(\overline{B}+\overline{A}B)+BC = \overline{C}(\overline{B}+\overline{A})+BC = \overline{AC}+\overline{BC}+BC = \overline{A+C}+\overline{B\oplus C}$



02

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

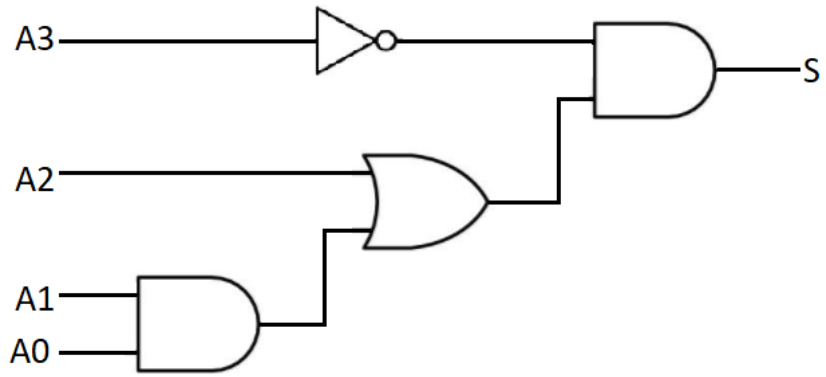
$S = \overline{ABC}+\overline{AB}C+\overline{A}B\overline{C}+A\overline{BC} = \overline{AB}(\overline{C}+C)+\overline{A}B\overline{C}+A\overline{BC} = \overline{AB}+\overline{A}B\overline{C}+A\overline{BC} = \overline{A}(\overline{B}+B\overline{C})+A\overline{BC} = \overline{AB}+\overline{AC}+A\overline{BC} = \overline{AB}+\overline{C}(\overline{A}+A\overline{B}) = \overline{AB}+\overline{AC}+\overline{BC} = \overline{A+B}+\overline{A+C}+\overline{B+C}$



03

A_3	A_2	A_1	A_0	S
0	0	0	0	0
0	0	0	1	0
0	0	1	0	0
0	0	1	1	1
0	1	0	0	1
0	1	0	1	1
0	1	1	0	1
0	1	1	1	1
1	0	0	0	0
1	0	0	1	0
1	0	1	0	0
1	0	1	1	0
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	0

$\overline{A_3}A_2A_1A_0 + \overline{A_3}A_2\overline{A_1}\overline{A_0} + \overline{A_3}A_2\overline{A_1}A_0 + \overline{A_3}A_2A_1\overline{A_0} + \overline{A_3}A_2A_1A_0 = \overline{A_3}A_1A_0(\overline{A_2} + A_2) + \overline{A_3}A_2\overline{A_0}(\overline{A_1} + A_1) + \overline{A_3}A_2\overline{A_1}A_0 = \overline{A_3}A_1A_0 + \overline{A_3}A_2\overline{A_0} + \overline{A_3}A_2\overline{A_1}A_0\overline{A_3}A_1A_0 + \overline{A_3}A_2(\overline{A_0} + \overline{A_1}A_0) = \overline{A_3}A_1A_0 + \overline{A_3}A_2\overline{A_0} + \overline{A_3}A_2\overline{A_1} = \overline{A_3}(A_1A_0 + A_2\overline{A_0} + A_2\overline{A_1}) = \overline{A_3}[A_2(\overline{A_1} + \overline{A_0}) + A_1A_0] = \overline{A_3}(A_2\overline{A_1A_0} + A_1A_0) = \overline{A_3}(A_1A_0 + A_2)$



04

P	I	L	A
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

$$A = \overline{P}\overline{I}L + P\overline{I}L + PI\overline{L} + PIL = \overline{I}L(\overline{P} + P) + PI(\overline{L} + L) = \overline{I}L + PI$$