NOME: EDSON FELIPE RIBEIRO DA FONSECA — CURSO: ENG. ELÉTRICA - 2004

RA: 032312 — DATA: 25/03/04

10,0 / 2B

EA-772 CIRCUITOS LÓGICOS

(1.) $\hat{f} = A(B + \bar{C}\bar{D})$

$\hat{f}_D = D + [B(\bar{C} + B)]$ ✓

$\bar{f}$ → Aplicando o teorema de De Morgan temos:

$\bar{f} = \overline{A(B + \bar{C}\bar{D})} = \bar{A} + (\overline{B \cdot \bar{C}\bar{D}}) = \bar{A} + [\bar{B} \cdot \overline{\bar{C}\bar{D}}] = \bar{A} + [\bar{B}(\bar{\bar{C}} + \bar{\bar{D}})] =$

$= \bar{A} + [\bar{B}(C + D)] \rightarrow \underline{\bar{f} = \bar{A} + [\bar{B}(C + D)]}$ ✓

(2.) $T = (\hat{f} + f_0)^{-1}$

$T = [A(B + \bar{C}\bar{D}) + A + B\bar{C} + B\bar{D}]\{\bar{A} + [\bar{B}(C + D)]\}$

$T = (AB + A\bar{C}\bar{D} + A + B\bar{C} + B\bar{D})(\bar{A} + \bar{B}C + \bar{B}\bar{D})$

$T = (\underbrace{A + AB + A\bar{C}\bar{D}}_{1} + B\bar{C} + B\bar{D})(\bar{A} + \bar{B}C + \bar{B}\bar{D}) = [A(\underbrace{1 + B + \bar{C}\bar{D}}_{1}) + B\bar{C} + B\bar{D}](\bar{A} + \bar{B}C + \bar{B}\bar{D})$

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

$T = A\bar{A} + A\bar{B}C + A\bar{B}\bar{D} + \bar{A}B\bar{C} + B\bar{C}\bar{B}C + B\bar{C}\bar{B}\bar{D} + \bar{A}B\bar{D} + B\bar{D}\bar{B}C + B\bar{D}\bar{B}\bar{D}$

$\underline{T(A,B,C,D) = A\bar{B}C + A\bar{B}\bar{D} + \bar{A}B\bar{C} + \bar{A}B\bar{D}}$ ✓

2,0

(b.) $f = A(B + \bar{C}\bar{D})$ → $\hat{f} = AB + A\bar{C}\bar{D}$

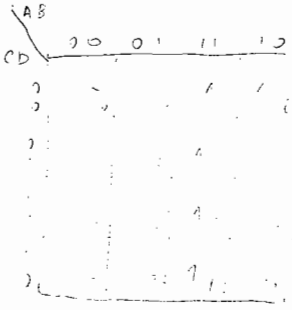


TABELA VERDADE DE f:

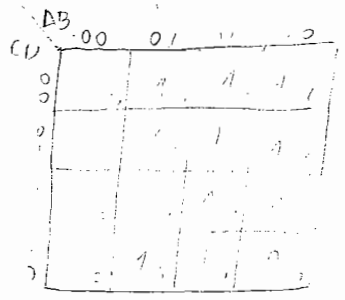
A	B	C	D	f
0	0	0	0	
0	0	0	1	
0	0	1	0	
0	0	1	1	
0	1	0	0	
0	1	0	1	
0	1	1	0	
0	1	1	1	
1	0	0	0	1
1	0	0	1	
1	0	1	0	
1	0	1	1	
1	1	0	0	1
1	1	0	1	1
1	1	1	0	1
1	1	1	1	1

✓

$f = S(8,9,10,11,12,13,14,15)$

- TABELA DE $f_d = A + [B \cdot (\bar{C} + \bar{D})]$

$f_d = A + B\bar{C} + B\bar{D}$

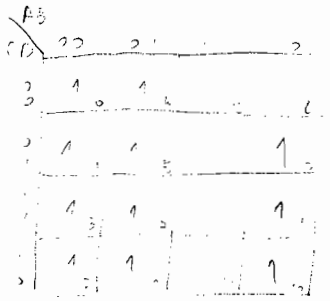


A	B	C	D	f_d
0	0	0	0	
0	0	0	1	
0	0	1	0	
0	0	1	1	
0	1	0	0	1
0	1	0	1	1
0	1	1	0	1
0	1	1	1	
1	0	0	0	1
1	0	0	1	1
1	0	1	0	1
1	0	1	1	1
1	1	0	0	1
1	1	0	1	1
1	1	1	0	1
1	1	1	1	1

$f_d = S(4,5,6,8,9,10,11,12,13,14,15)$

- TABELA VERDADE DE $\bar{f} = \bar{A} + [\bar{B} \cdot (C + D)]$ = TABELA OPOSTA DE f

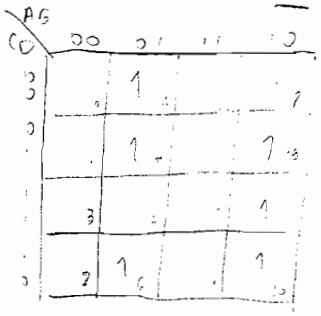
$\bar{f} = \bar{A} + \bar{B}C + \bar{B}D$



A	B	C	D	$\bar{f}$
0	0	0	0	1
0	0	0	1	1
0	0	1	0	1
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	
1	0	0	1	1
1	0	1	0	1
1	0	1	1	1
1	1	0	0	
1	1	0	1	
1	1	1	0	
1	1	1	1	

$\bar{f} = S(0,1,2,3,4,5,7,8,9,10,11)$

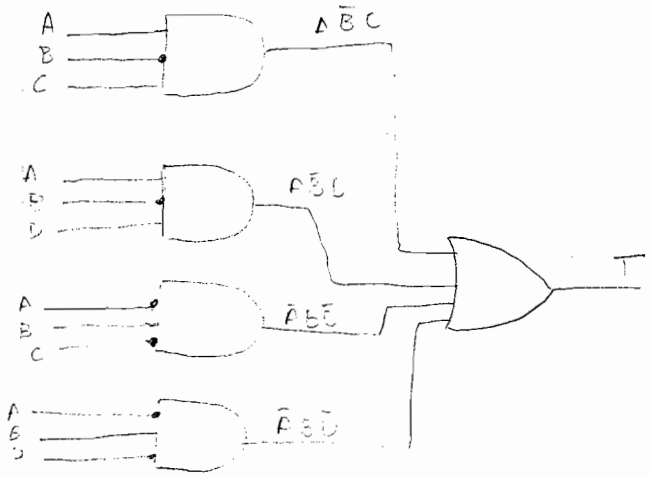
- TABELA VERDADE DE $T = A\bar{B}C + A\bar{B}D + \bar{A}B\bar{C} + \bar{A}B\bar{D}$



A	B	C	D	T
0	0	0	0	
0	0	0	1	
0	0	1	0	
0	0	1	1	
0	1	0	0	1
0	1	0	1	1
0	1	1	0	1
0	1	1	1	
1	0	0	0	
1	0	0	1	1
1	0	1	0	1
1	0	1	1	1
1	1	0	0	
1	1	0	1	
1	1	1	0	
1	1	1	1	

$T = S(4,5,6,8,10,11)$

(c) $T = A\bar{B}C + A\bar{B}D + \bar{A}B\bar{C} + \bar{A}BD$ simplificada anteriormente, item a)



✓ 2,0

(d) $T = A\bar{B}C + A\bar{B}D + \bar{A}BC + \bar{A}BD$

custo = (3 + 3 + 3 + 3) + 4 = 16

✓ 2,0

(2) $F(A,B,C,D,E) = \overline{(A+B+C+D+E)} + ABD + BC + CE$ ✓

2,0