

Conteúdo lógicos e Digitais - lista 2

1 - Determine as expressões booleanas de saída dos circuitos abaixo

(A) $(A \cdot \bar{B}) + (B \cdot \bar{A}) + A = S$

(B) $\overline{\left(\overline{((\bar{A} \cdot \bar{B}) \cdot C)} + B \right)} = S$

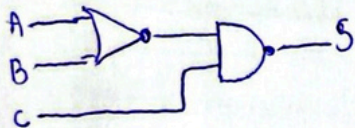
(C) $\overline{((\bar{A} + \bar{B}) \cdot C \cdot D)} \cdot \bar{D} = S$

(D) $\overline{((\bar{A} \cdot \bar{B}) + (\bar{B} + C))} \cdot \overline{(\bar{B} + C) + D} = S$

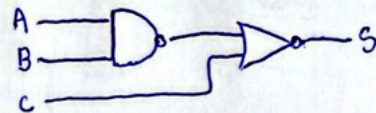
(E) $\overline{((A \oplus B) \cdot (\bar{A} \cdot C))} + (\bar{A} + D) = S$

2 - Determine os circuitos lógicos das seguintes expressões booleanas:

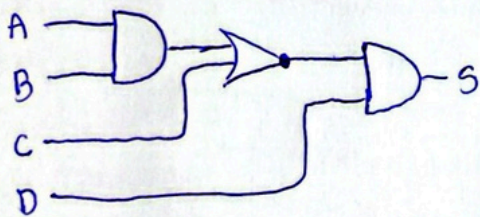
(A) $S = \overline{(A + B)} \cdot C$



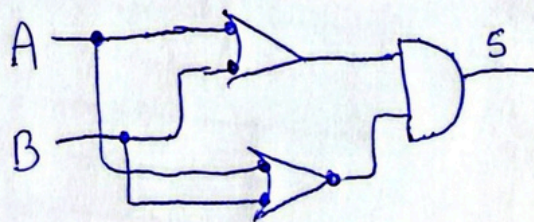
(B) $S = \overline{A \cdot B + C}$



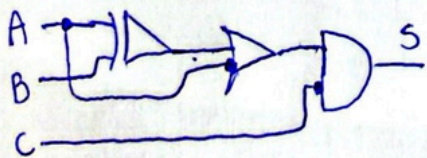
(C) $S = \overline{(A \cdot B + C)} \cdot D$



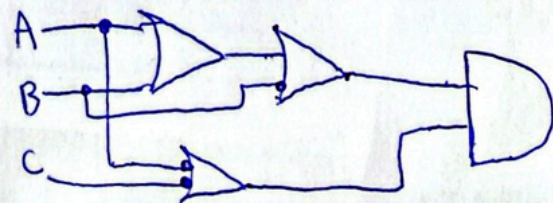
(D) $S = (\bar{A} + \bar{B}) \cdot (\bar{A} + \bar{B})$



(E) $S = \overline{(A \oplus B) + \bar{A}} \cdot \bar{C}$



(F) $S = \bar{B} + (A + B) \cdot \bar{A} + \bar{C}$



3) Determine as tabelas verdade para as expressões lógicas de sentido anterior

A) $S = \overline{A+B} \cdot C$

A	B	C	A+B	$\overline{A+B}$	$\overline{A+B} \cdot C$	S
0	0	0	0	1	0	1
0	0	1	0	1	1	0
0	1	0	1	0	0	1
0	1	1	1	0	0	1
1	0	0	1	0	0	1
1	0	1	1	0	0	1
1	1	0	1	0	0	1
1	1	1	1	0	0	1

B) $S = \overline{A \cdot B} + C$

A	B	C	A·B	$\overline{A \cdot B}$	$\overline{A \cdot B} + C$	S
0	0	0	0	1	1	0
0	0	1	0	1	1	0
0	1	0	0	1	1	0
0	1	1	0	1	1	0
1	0	0	0	1	1	0
1	0	1	0	1	1	0
1	1	0	1	0	0	1
1	1	1	1	0	1	0

③ $S = \overline{A \cdot B + C} \cdot D$

A	B	C	D	$A \cdot B$	$A \cdot B + C$	$\overline{A \cdot B + C}$	\overline{D}	S
0	0	0	0	0	0	1	1	1
0	0	0	1	0	0	1	0	0
0	0	1	0	0	1	0	1	0
0	0	1	1	0	1	0	0	0
0	1	0	0	0	0	1	1	1
0	1	0	1	0	0	1	0	0
0	1	1	0	0	1	0	1	0
0	1	1	1	0	1	0	0	0
1	0	0	0	0	0	1	1	1
1	0	0	1	0	0	1	0	0
1	0	1	0	0	1	0	1	0
1	0	1	1	0	1	0	0	0
1	1	0	0	1	1	0	1	0
1	1	0	1	1	1	0	0	0
1	1	1	0	1	1	0	1	0
1	1	1	1	1	1	0	0	0

④ $S = (\overline{A+B}) \cdot \overline{(\overline{A+B})}$

A	B	\overline{A}	\overline{B}	$\overline{A+B}$	$\overline{\overline{A+B}}$	S
0	0	1	1	1	0	0
0	1	1	0	1	0	0
1	0	0	1	1	0	0
1	1	0	0	0	1	0

3) $E) S = (A \oplus B) + \bar{A} \cdot \bar{C}$

A	B	C	$A \oplus B$	\bar{A}	$(A \oplus B) + \bar{A}$	\bar{C}	S
0	0	0	0	1	1	1	1
0	0	1	0	1	1	0	0
0	1	0	1	1	1	1	1
0	1	1	1	1	1	0	0
1	0	0	1	0	1	1	1
1	0	1	1	0	1	0	0
1	1	0	0	0	0	1	0
1	1	1	0	0	0	0	0

4) $S = (\bar{B} + (A \oplus B)) \cdot \bar{A} + \bar{C}$

A	B	C	\bar{B}	$A \oplus B$	$\bar{B} + (A \oplus B)$	\bar{A}	\bar{C}	S
0	0	0	1	0	1	1	1	1
0	0	1	1	0	1	1	0	1
0	1	0	0	1	1	1	1	1
0	1	1	0	1	1	1	0	1
1	0	0	1	1	1	0	1	1
1	0	1	1	1	1	0	0	0
1	1	0	0	0	0	0	1	0
1	1	1	0	0	0	0	0	0

4) Determine as expressões booleanas a partir das tabelas verdade

(A)

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

$$S = \bar{A} \cdot \bar{B} \cdot C + A \cdot \bar{B} \cdot \bar{C} + A \cdot \bar{B} \cdot C$$

(B)

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

$$S = \bar{A} \cdot B \cdot \bar{C} + \bar{A} \cdot B \cdot C + A \cdot B \cdot C$$

③

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

$$S = \bar{A} \cdot \bar{B} \cdot C + \bar{A} \cdot B \cdot \bar{C} + \bar{A} \cdot B \cdot C + A \cdot \bar{B} \cdot \bar{C} + A \cdot B \cdot \bar{C} + A \cdot B \cdot C$$

④

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	1
1	1	0	1
1	1	1	0

$$S = \bar{A} \cdot \bar{B} \cdot \bar{C} + \bar{A} \cdot \bar{B} \cdot C + \bar{A} \cdot B \cdot \bar{C} + A \cdot \bar{B} \cdot C + A \cdot B \cdot \bar{C}$$

⑤

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

$$S = \bar{A} \cdot \bar{B} \cdot \bar{C} \cdot \bar{D} + \bar{A} \cdot \bar{B} \cdot C \cdot D + \bar{A} \cdot B \cdot \bar{C} \cdot \bar{D} + \bar{A} \cdot B \cdot C \cdot D + A \cdot \bar{B} \cdot \bar{C} \cdot D + A \cdot B \cdot \bar{C} \cdot D$$

5) Determine o sinal de saída para os circuitos abaixo

