



Governo do Estado de Mato Grosso do Sul
Secretaria de Estado de Educação
Centro de Educação Profissional Ezequiel Ferreira Lima



Nome: **Gabarito**
 Curso: Técnico em Eletrônica
 Data: **08/09/2010**

Professor: Samuel M. B. Cavalcante
 Disciplina: Eletrônica Digital
 Nota:

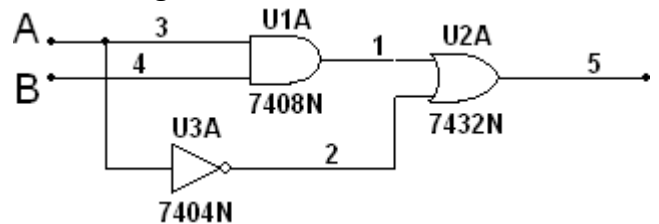
1) Dada as expressões, montar o circuito lógico e a tabela verdade com as saídas intermediárias. (8 pontos)

a-) $S = A.B + \bar{A}$

Tabela Verdade:

| Entradas | | Saída Intermediária | | Saída |
|----------|---|---------------------|-------|-----------------|
| A | B | \bar{A} | $A.B$ | $A.B + \bar{A}$ |
| 0 | 0 | 1 | 0 | 1 |
| 0 | 1 | 1 | 0 | 1 |
| 1 | 0 | 0 | 0 | 0 |
| 1 | 1 | 0 | 1 | 1 |

Circuito Lógico:



b-) $S = \bar{A}.\bar{B}.\bar{C} + A.\bar{B}.\bar{C} + A.B.C$

Circuito Lógico:

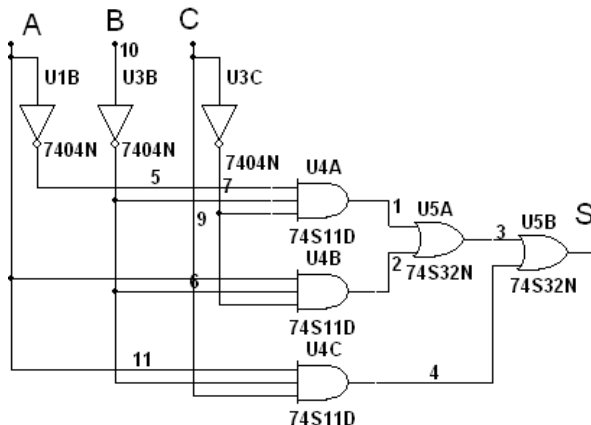


Tabela Verdade:

| Entradas | | | Saídas Intermediárias | | | | | | Saída |
|----------|---|---|-----------------------|-----------|-----------|---------------------------|---------------------|---------|---|
| A | B | C | \bar{A} | \bar{B} | \bar{C} | $\bar{A}.\bar{B}.\bar{C}$ | $A.\bar{B}.\bar{C}$ | $A.B.C$ | $\bar{A}.\bar{B}.\bar{C} + A.\bar{B}.\bar{C} + A.B.C$ |
| 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 |
| 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
| 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

$$c-) S = \overline{A}\overline{B}\overline{C}D + \overline{A}\overline{B}C\overline{D} + \overline{A}D$$

Circuito Lógico:

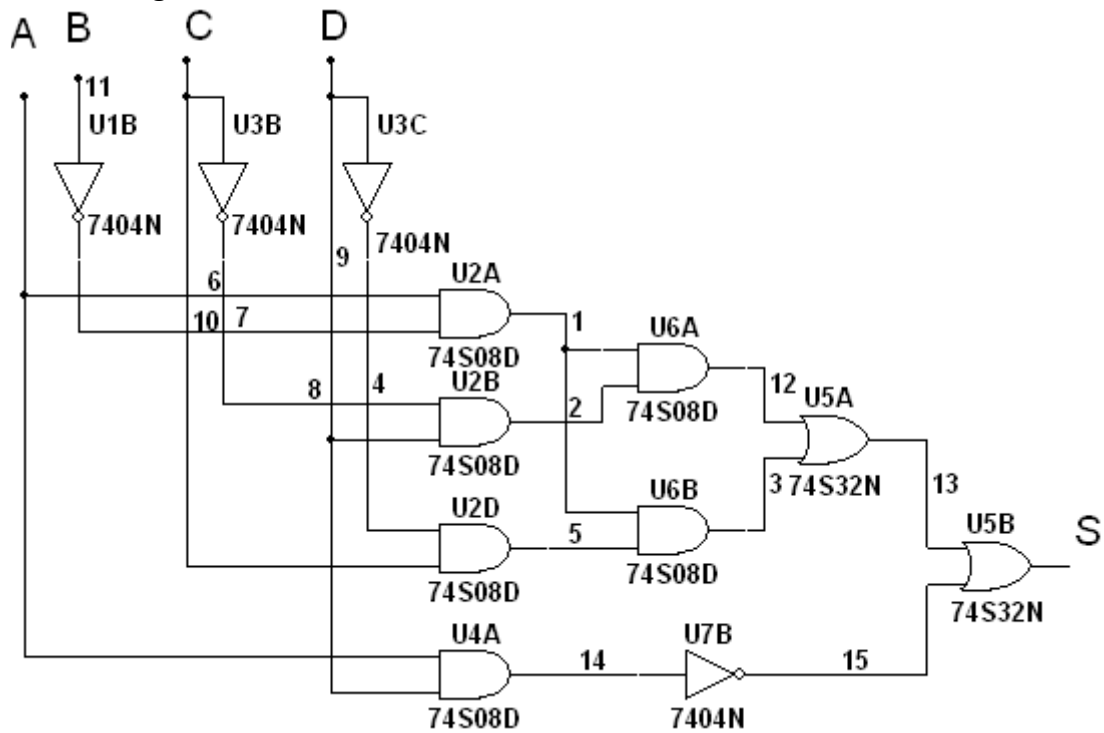


Tabela Verdade:

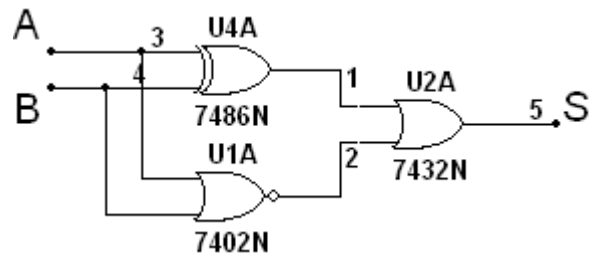
| Entradas | | | | Saídas Intermediárias | | | | | | Saída |
|----------|---|---|---|-----------------------|----------------|----------------|---|--|-----------------|--|
| A | B | C | D | \overline{B} | \overline{C} | \overline{D} | $\overline{A}\overline{B}\overline{C}D$ | $\overline{A}\overline{B}\overline{C}\overline{D}$ | $\overline{A}D$ | $\overline{A}\overline{B}\overline{C}D + \overline{A}\overline{B}\overline{C}\overline{D} + \overline{A}D$ |
| 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 |
| 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |
| 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
| 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 |
| 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

d-) $S = A \oplus B + \overline{(A+B)}$

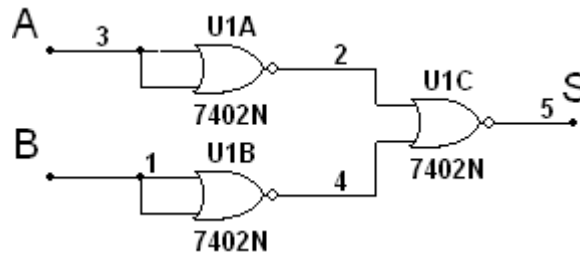
Tabela Verdade:

| Ent. | | Saída Interm. | | Saída |
|------|---|---------------|------------------|---------------------------------|
| A | B | $A \oplus B$ | $\overline{A+B}$ | $A \oplus B + \overline{(A+B)}$ |
| 0 | 0 | 0 | 1 | 1 |
| 0 | 1 | 1 | 0 | 1 |
| 1 | 0 | 1 | 0 | 1 |
| 1 | 1 | 0 | 0 | 0 |

Circuito Lógico:



e-) $S = \overline{\overline{A+A+B+B}}$



| Entradas | | Saída Intermediaria | | | Saída |
|----------|---|---------------------|------------------|----------------------|---------------------------------|
| A | B | $\overline{A+A}$ | $\overline{B+B}$ | $\overline{A+A+B+B}$ | $\overline{\overline{A+A+B+B}}$ |
| 0 | 0 | 1 | 1 | 1 | 0 |
| 0 | 1 | 1 | 0 | 1 | 0 |
| 1 | 0 | 0 | 1 | 1 | 0 |
| 1 | 1 | 0 | 0 | 0 | 1 |

2 – Simplifique a expressão utilizando a álgebra booleana. (2 pontos).

a-) $S = \overline{\overline{A+A+B+B} + A.B + \overline{A.B}}$

Aplicando $y + \overline{y} = 1$ temos,

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

Aplicando $y + 1 = 1$ temos,

$$S = 1$$