**Comprove que a expressão A.B**$ $**+**$\overline{A}$**.**$\overline{B}$ **Equivale à porta XNOR**

**Porta Lógica - Logic Gate XNOR** $⊕$

**Porta NOT ou INVERTER (inversor)**

**Porta Lógica - Logic Gate OR ou OU ou +**

**Desafio 8 – Tendo em conta a expressão S =** A.B$ $+$\overline{A}$.$\overline{B}$

**Desafio 8.1 – Tendo em conta a expressão**  $S=\overline{A⊕B}$

a) Calcular o nº de saídas possíveis.

b) Preencher a tabela de verdade.

c) Desenhar o circuito no logisim.

d) Desenhar o diagrama temporal.

e) Conclusão.

**Resolução**

a) Calcular o nº de saídas possíveis. Resposta 22=\_\_\_\_

b) Preencher as tabelas de verdade

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| --- | --- | --- | --- | --- | --- |
| 22=4 | Entradas |  |  |  | SaídaA.B$ $+$\overline{A}$.$\overline{B}$ |
| **A** | **B** | $$\overline{A}$$ | $$\overline{B}$$ | $$A.B$$ | $\overline{A}$.$\overline{B}$ | **S** |
| 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 3 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |

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|  |  |  |
| --- | --- | --- |
| 22=4 | Entradas | Saída$$\overline{A⊕B}$$ |
| **A** | **B** | **S** |
| 1 | 0 | 0 | 1 |
| 2 | 0 | 1 | 0 |
| 3 | 1 | 0 | 0 |
| 4 | 1 | 1 | 1 |

 |



b) Desenhar os circuitos no logisim (Teste os circuitos com entradas iguais).

c) Desenhar os diagramas temporais.

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| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
| A | 0 | 0 | 1 | 1 |  |
|  |  |  |  |  |  |
| B | 0 | 1 | 0 | 1 |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| S | 0 | 0 | 0 | 0 |  |

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|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
| A | 0 | 0 | 1 | 1 |  |
|  |  |  |  |  |  |
| B | 0 | 1 | 0 | 1 |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| S | 0 | 0 | 0 | 0 |  |

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f) Conclusão. **S =** A.B$ $+$\overline{A}$.$\overline{B} $ é igual a $S=\overline{A⊕B}$. Também conhecida como a porta coincidência. A saída é 1 quando as entradas são iguais.