Parte I

# Decoder 2:4

(2 entradas 4 saídas)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Entradas | | Saídas | | | |
| I1 | I0 | Q0 | Q1 | Q2 | Q3 |
| 0 | 0 | 1 | 0 | 0 | 0 |
| 0 | 1 | 0 | 1 | 0 | 0 |
| 1 | 0 | 0 | 0 | 1 | 0 |
| 1 | 1 | 0 | 0 | 0 | 1 |

Parte II

# Multiplexer 2:1

(2 entradas 1 saída)

|  |  |
| --- | --- |
| Entradas | Saídas |
| Sel | dataOut |
| 0 | dataIn0 |
| 1 | dataIn1 |

# Multiplexer 4:1

(4 entradas 1 saída)

|  |  |  |
| --- | --- | --- |
| Entradas | | Saídas |
| Sel1 | Sel0 | dataOut |
| 0 | 0 | dataIn0 |
| 0 | 1 | dataIn1 |
| 1 | 0 | dataIn2 |
| 1 | 1 | dataIn3 |

Parte IIII

# Priority encoder 4:2

(4 entradas 2 saídas)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Entradas | | | | Saídas | | |
| decodedIn | | | | encodedOut | |  |
| 0 | 1 | 2 | 3 | 1 | 0 | validOut |
| 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| x | 1 | 0 | 0 | 0 | 1 | 1 |
| x | x | 1 | 0 | 1 | 0 | 1 |
| x | x | x | 1 | 1 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 |

architecture Behavioral of Penc4\_2 is

begin

process(decodedIn)

begin

if (decodedIn(3)='1') then

encodedOut <= "11";

validOut <= '1';

elsif (decodedIn(2)='1') then

encodedOut <= "10";

validOut <= '1';

elsif (decodedIn (1)='1') then

encodedOut <= "01";

validOut <= '1';

elsif (decodedIn(0)='1') then

encodedOut <= "00";

validOut <= '1';

else

encodedOut <= "00";

validOut <= '0';

end if;

end process;

end Behavioral;