רטוב 1 – ספרתיות

**2.1**

ביטוי לZ: z=[((s nand s) nand d0) nand (s nand d1)]

|  |  |  |  |
| --- | --- | --- | --- |
| S | D0 | D1 | Z |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 0 |
| 0 | 1 | 0 | 1 |
| 0 | 1 | 1 | 1 |
| 1 | 0 | 0 | 0 |
| 1 | 0 | 1 | 1 |
| 1 | 1 | 0 | 0 |
| 1 | 1 | 1 | 1 |

**טבלת אמת**

**טבלת זמנים**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Path | D0 | D1 | Sel | Tpd |
| D0G2G4 | 0to1 | 0 | 0 | 7 |
| D0G2G4 | 1to0 | 0 | 0 | 7 |
| D1G3G4 | 0 | 0to1 | 0 | 7 |
| D1G3G4 | 0 | 1to0 | 0 | 7 |
| SG1G2G4 | 1 | 0 | 0to1 | 13 |
| SG1G2G4 | 1 | 0 | 1to0 | 8 |
| SG3G4 | 0 | 1 | 0to1 | 7 |
| SG3G4 | 0 | 1 | 1to0 | 7 |

**ת.ז נבחרת: 212363295**

מימשנו רק עם שערי nand ועבורם:

Tpdhl = 6, Tpdlh = 1

**2.2**

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טבלת השהיות:

|  |  |  |
| --- | --- | --- |
|  | Tpdlh | Tpdhl |
| NAND2 | 6 | 6 |
| OR2 | 3 | 3 |
| XNOR2 | 3 | 3 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Path | D0 | D1 | D2 | D3 | S1 | S0 | Tpd |
| S1Sel3 | 0 | 0 | 1 | 0 | 0to1 | 0 | 12 |
| S1Sel3 | 0 | 0 | 1 | 0 | 1to0 | 0 | 12 |

**2.3**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Path | a | b | Cin | a\_ns | Out | Tpd |
| aG1G5G7 | 0to1 | 1 | 0 | 0 | Cout | 15 |
| aG6 | 0to1 | 1 | 0 | 0 | S | 3 |
| bG2G5G7 | 0 | 0to1 | 0 | 0 | Cout | 15 |
| bG4G6 | 0 | 0to1 | 0 | 0 | S | 6 |
| a\_nsG1G5G7 | 0 | 1 | 0 | 0to1 | Cout | 15 |
| a\_ns----- | --- | --- | --- | --- | S | --- |
| CinG4G6 | 0 | 0 | 0to1 | 0 | Cout | 6 |
| CinG2G5G7 | 0 | 0 | 0to1 | 0 | S | 15 |