Ryan Miranda Barbosa RA:01232061

1)

expressão booleana: S = !((A+B+C) . (D+E))

tabela verdade:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A | B | C | D | E | S1 | S2 | S | expressão booleana: |
| 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | S = (!A+B+!C) . (!D+!E) |
| 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | |
| 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | |
| 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | |
| 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | S = (!A+B+C) . (!D+!E) |
| 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | |
| 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | |
| 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | S = (!A+!B+!C) . (!D+!E) |
| 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | S = (!A+!B+!C) . (!D+E) |
| 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | S = (!A+!B+!C) . (D+!E) |
| 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | S = (!A+!B+!C) . (D+E) |
| 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | S = (!A+!B+C) . (!D+!E) |
| 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | |
| 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | |
| 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | |
| 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | S = (A+B+!C) . (!D+!E) |
| 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | |
| 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | |
| 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | |
| 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | S = (A+B+C) . (!D+!E) |
| 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | |
| 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | |
| 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | S = (A+!B+!C) . (!D+!E) |
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | |
| 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | |
| 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | |
| 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | S = (A+!B+C) . (!D+!E) |
| 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | |
| 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | |
| 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | |

2)

Circuito:

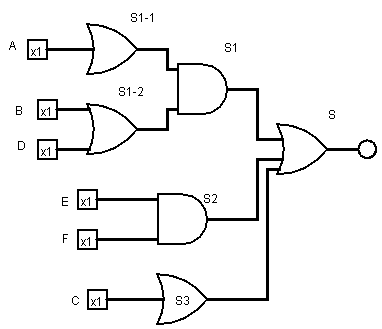


tabela verdade:

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A | B | D | E | F | C | S1-1 | S1-2 | S1 | S2 | S3 | S | tabela verdade |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | S = !A(!B+!D) + (!E!F) + C |
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | S = !A(!B+!D) + (!EF) + C |
| 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | S = !A(!B+!D) + (E!F) + C |
| 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |  |
| 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | S = !A(!B+!D) + (EF) + C |
| 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |  |
| 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | S = !A(!B+D) + (!E!F) + C |
| 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |  |
| 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | S = !A(!B+D) + (!EF) + C |
| 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |  |
| 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | S = !A(!B+D) + (E!F) + C |
| 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |  |
| 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | S = !A(!B+D) + (EF) + C |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |  |
| 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | S = !A(B+!D) + (!E!F) + C |
| 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |  |
| 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | S = !A(B+!D) + (!EF) + C |
| 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |  |
| 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | S = !A(B+!D) + (E!F) + C |
| 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | S = !A(B+!D) + (EF) + !C |
| 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | S = A(!B+D) + (EF) + C |
| 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |  |
| 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | S = !A(B+D) + (!E!F) + C |
| 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |  |
| 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | S = !A(B+D) + (!EF) + C |
| 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |  |
| 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | S = !A(B+D) + (E!F) + C |
| 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | S = !A(B+D) + (EF) + C |
| 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | S = !A(B+D) + (EF) + C |
| 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |  |
| 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | S = A(!B+!D) + (!E!F) + C |
| 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |  |
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | S = A(!B+!D) + (!EF) + C |
| 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |  |
| 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | S = A(!B+!D) + (E!F) + C |
| 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | S = A(!B+!D) + (EF) + !C |
| 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | S = A(!B+!D) + (EF) + C |
| 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | S = A(!B+D) + (!E!F) + !C |
| 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | S = A(!B+D) + (!E!F) + C |
| 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | S = A(!B+D) + (!EF) + !C |
| 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | S = A(!B+D) + (!EF) + C |
| 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | S = A(!B+D) + (E!F) + !C |
| 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | S = A(!B+D) + (E!F) + C |
| 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | S = A(!B+D) + (EF) + !C |
| 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | S = A(!B+D) + (EF) + C |
| 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | S = A(B+!D) + (!E!F) + !C |
| 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | S = A(B+!D) + (!E!F) + C |
| 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | S = A(B+!D) + (!EF) + !C |
| 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | S = A(B+!D) + (!EF) + C |
| 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | S = A(B+!D) + (E!F) + !C |
| 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | S = A(B+!D) + (E!F) + C |
| 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | S = A(B+!D) + (EF) + !C |
| 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | S = A(B+!D) + (EF) + C |
| 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | S = A(B+D) + (!E!F) + !C |
| 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | S = A(B+D) + (!E!F) + C |
| 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | S = A(B+D) + (!EF) + !C |
| 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | S = A(B+D) + (!EF) + C |
| 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | S = A(B+D) + (E!F) + !C |
| 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | S = A(B+D) + (E!F) + C |
| 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | S = A(!B+!D) + (!E!F) + C |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | S = A(!B+!D) + (!E!F) + C |

3)

expressão booleana:

S1 = !A!B!

S2 = !A!BCD

S3 = A!B!C!D

S4 = ABCD

Circuito:

