

Creating a Logic Circuit from a Truth Table

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Truth Table To Circuit

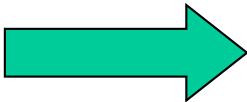


A	B	C	D	F
0	0	0	0	0
0	0	0	1	1
0	0	1	0	1
0	0	1	1	1
0	1	0	0	0
0	1	0	1	0
0	1	1	0	0
0	1	1	1	0
1	0	0	0	0
1	0	0	1	1
1	0	1	0	0
1	0	1	1	1
1	1	0	0	1
1	1	0	1	1
1	1	1	0	1
1	1	1	1	1

Since the expression is written in Sum of Products (SOP) form, if any one of the terms is “true”, the F is true. If All terms are “false” then F is false.

Select all of the True Terms

A	B	C	D	F
0	0	0	1	1
0	0	1	0	1
0	0	1	1	1
1	0	0	1	1
1	0	1	1	1
1	1	0	0	1
1	1	0	1	1
1	1	1	0	1
1	1	1	1	1

Group Terms

					Terms	
A	B	C	D	F		
0	0	1	0	1	When A=B=0, C = 1, F = 1	 $A'B'C$
0	0	0	1	1	When B=0, D=1 F = 1	 $B'D$
0	0	1	1	1		
1	0	0	1	1		
1	0	1	1	1	When A=B=1, F = 1	 AB
1	1	0	0	1		
1	1	0	1	1		
1	1	1	0	1		
1	1	1	1	1		

Expression: $F = AB + A'B'C + B'D$

Convert the Expression to a Circuit

Expression: $F = AB + A'B'C + B'D$

