



**Truth Table:**

Signal 1	Signal 2	Signal 3	Signal 4	Output
0	0	0	0	0
0	0	0	1	0
0	0	1	0	0
0	0	1	1	0
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	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	0

**Explanation:**

The output that this four-input logic block creates is  $A\bar{B}D(\bar{B} + \bar{C})$ . Where A is Signal 1, B is Signal 2, C is Signal 3, and D is Signal 4. If it is satisfied that A and D are 1 and B is 0, it does not matter the quantity of C. Following the logic circuit, the value of C and B will be inverted, so it must be 0, so it can become one and join with A as 1 to form 1. Thus, in the conclusion the “and” gate can pair with the D, which is also a 1, providing a final output of one. This is also an output of  $A\bar{B}D(\bar{B} + \bar{C})$ .