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TRADE: BCSE-Lateral - 2nd Year

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Truth Table:

Inputs			Outputs	
A	B	C_{in}	C_{out} (carry)	S (sum)
0	0	0	0	0
0	0	1	0	1
0	1	0	0	1
0	1	1	1	0
1	0	0	0	1
1	0	1	1	0
1	1	0	1	0
1	1	1	1	1

K maps

For S:

BC_{in}

A	$\bar{B}\bar{C}_{in}$	$\bar{B}C_{in}$	BC_{in}	$B\bar{C}_{in}$
$\bar{A}$	0	1	0	1
A	1	0	1	0

$$S = A \oplus B \oplus C_{in}$$

For Cout

BC_{in}

A	$\bar{B}\bar{C}_{in}$	$\bar{B}C_{in}$	BC_{in}	$B\bar{C}_{in}$
$\bar{A}$	0	0	1	0
A	0	1	1	1

$$C_{out} = BC_{in} + AB + AC_{in}$$

A0

B0

C0 IN

S0

S0

S1

S2

C OUT

C0 O

A1

B1

A2

B2