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EDS Student design board Date No.

A_win = 8

B_win = 2

S/N	D	C	B	A	A_win	B_win	Decimal
1	0	0	0	0	x	x	0
2	0	0	0	1	x	x	1
3	0	0	1	0	0	1	2
4	0	0	1	1	0	0	3
5	0	1	0	0	0	0	4
6	0	1	0	1	0	0	5
7	0	1	1	0	0	0	6
8	0	1	1	1	0	0	7
9	1	0	0	0	1	0	8
10	1	0	0	1	x	x	9
11	1	0	1	0	x	x	10
12	1	0	1	1	x	x	11
13	1	1	0	0	x	x	12
14	1	1	0	1	x	x	13
15	1	1	1	0	x	x	14
16	1	1	1	1	x	x	15

A_win = 8

	$\bar{B}\bar{A}$	$\bar{B}A$	BA	$B\bar{A}$
$\bar{D}\bar{C}$	x	x	0	0
$\bar{D}C$	0	0	0	0
$D\bar{C}$	x	x	x	x
DC	1	x	x	x

A_win = D

B_win = 2

	$\bar{B}\bar{A}$	$\bar{B}A$	BA	$B\bar{A}$
$\bar{D}\bar{C}$	x	x	0	1
$\bar{D}C$	0	0	0	0
DC	x	x	x	x
$D\bar{C}$	0	x	x	x

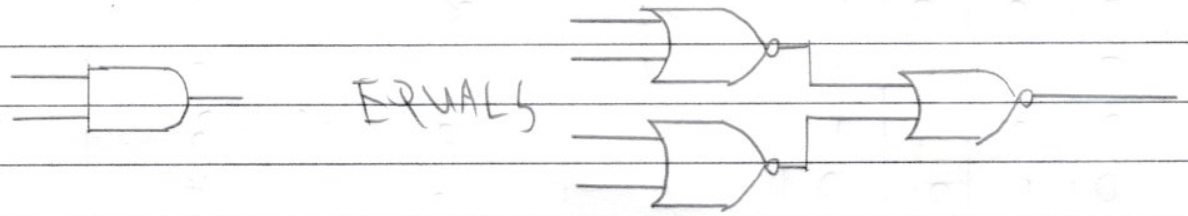
B_win = $B\bar{A}\bar{C}$

Date No.

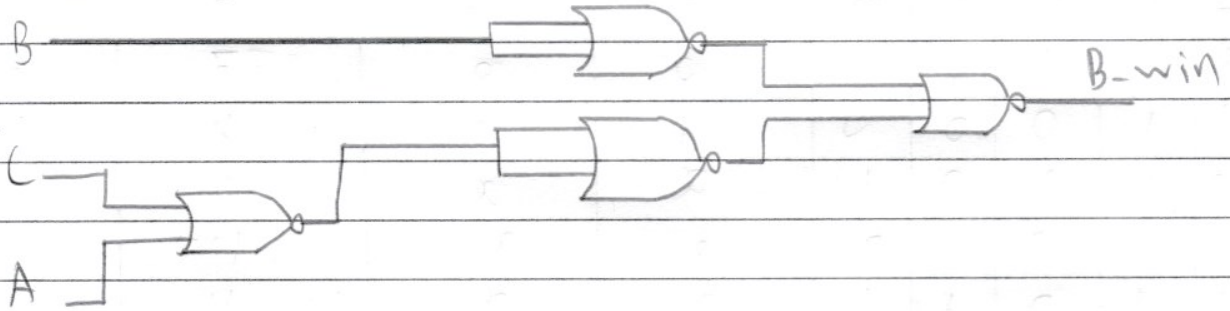
For B_win

$B\bar{A}\bar{C} = (\overline{A+C}) \cdot B$

To implement AND gate using NOR gate



Implementing B_win



Regarding Alternate B_win solution

~~$\bar{A}\bar{B}$ $\bar{A}B$ AB $A\bar{B}$~~

$\bar{D}\bar{C}$		$B\bar{A}$	$\bar{B}A$	BA	$B\bar{A}$
$\bar{D}C$	$\bar{D}\bar{C}$	(x)	x	0	(1)
DC	$\bar{D}C$	0	0	0	0
$D\bar{C}$	DC	x	x	x	x
	$D\bar{C}$	0	x	x	x

$B\_win = \bar{A}\bar{D}\bar{C}$

$B\_win = \bar{A}\bar{D}\bar{C}$ cannot be used as B_win lights up on both 0000 and 0010. It also cannot be simplified ∴ to compensate for this issue