SUBJECT : SCSR1013 DIGITAL LOGIC

SESSION/SEM : SEM-1

LAB-1 : COMBINATION LOGIC

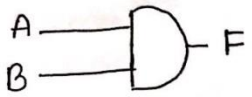
NAME : NABIL RAYHAN – (A20EC9107)

NAME : NAZMUL ALAM KHAN

D. Preminary work

[1] AND GATE

Symbol :



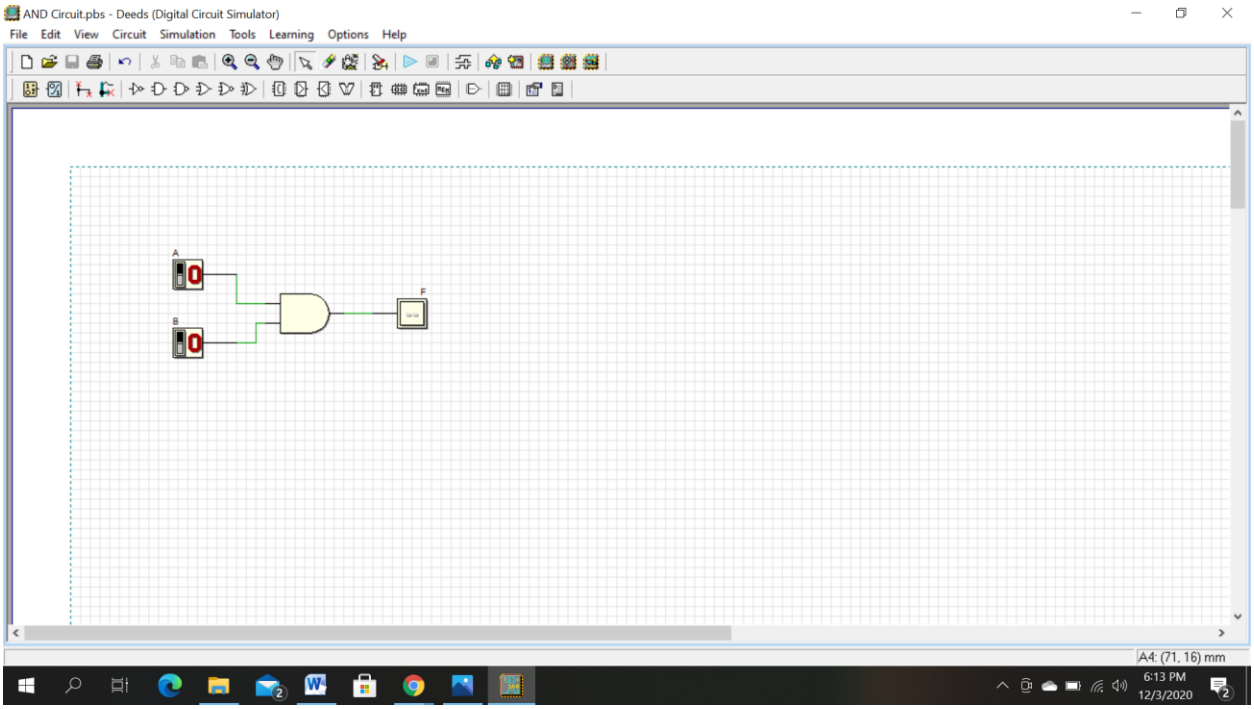
IC Number : 7408

Truth table : 1

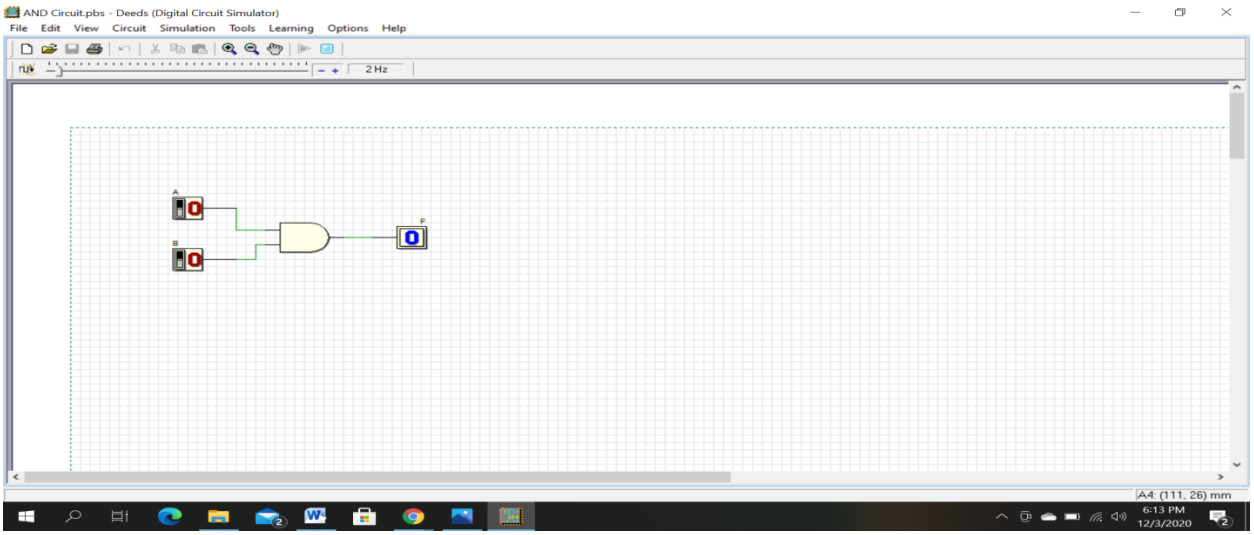
A	B	F = A · B
0	0	0
0	1	0
1	0	0
1	1	1

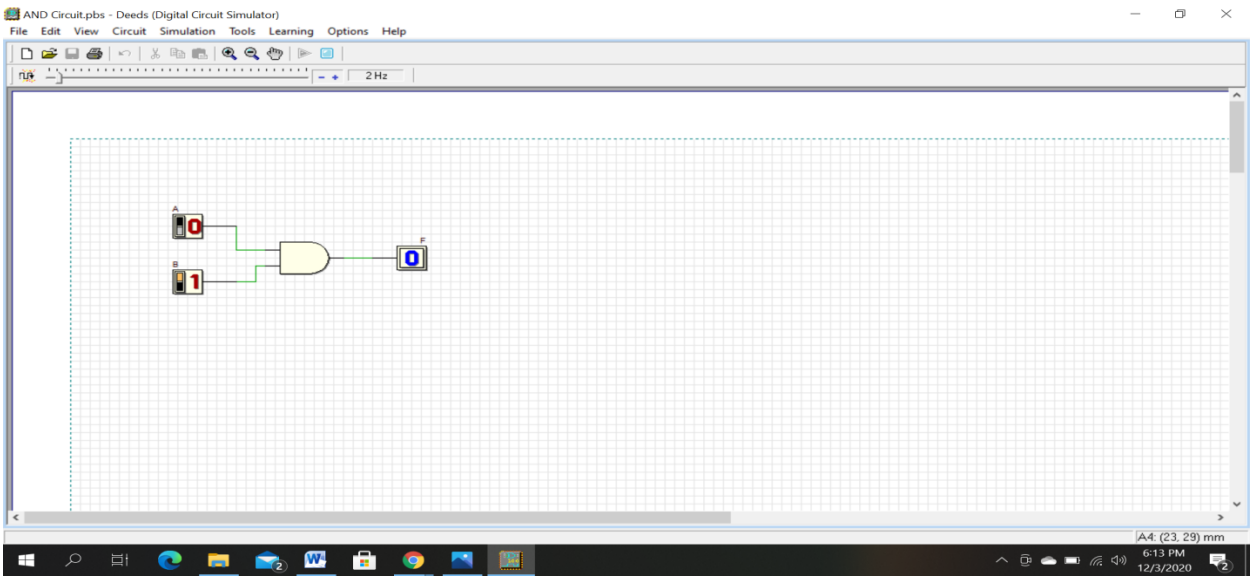
* D.1 WITH DEEDS SIMULATOR

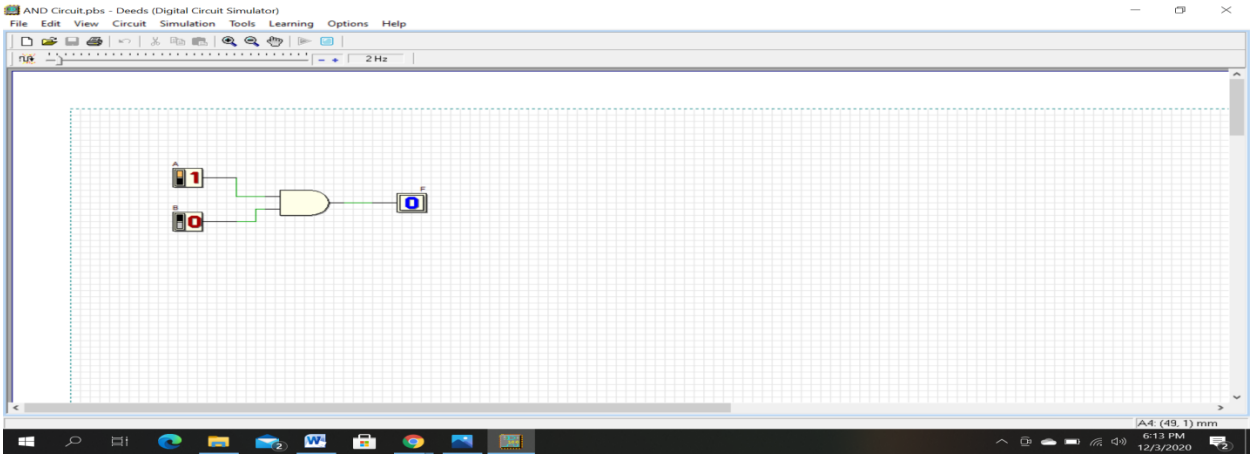
AND GATE

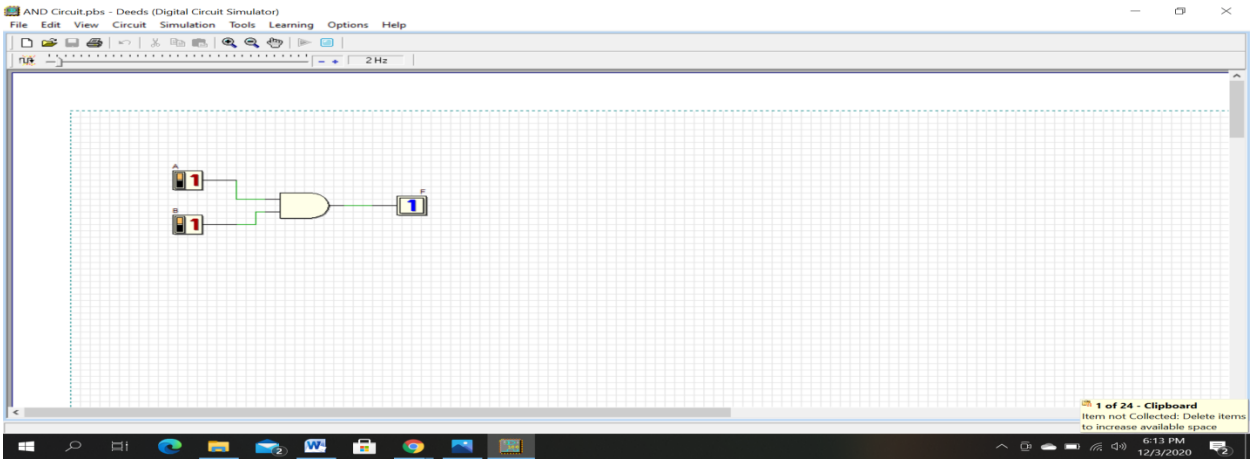


*TRUTH TABLE WITH DEEDS SIMULATOR




AND Circuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
A
0
B
1
F
0
A4: (23, 29) mm
6:13 PM
12/3/2020


AND Circuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
A
1
B
0
F
0
A4: (49, 1) mm
6:13 PM
12/3/2020

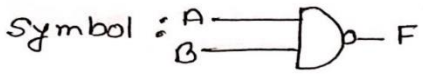

AND Circuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
A
1
B
1
F
1
1 of 24 - Clipboard
Item not Collected. Delete items to increase available space
6:13 PM
12/3/2020

D.1.

NAND GATE

D.1

NAND GATE

Symbol : 

IC Number : 7400

Truth-table :02

A	B	A·B	$F=\overline{A \cdot B}$
0	0	0	1
0	1	0	1
1	0	0	1
1	1	1	0

Here,

~~A·B ≠ $\overline{A \cdot B}$~~

$\overline{0 \cdot 0} = \bar{0} = 1$

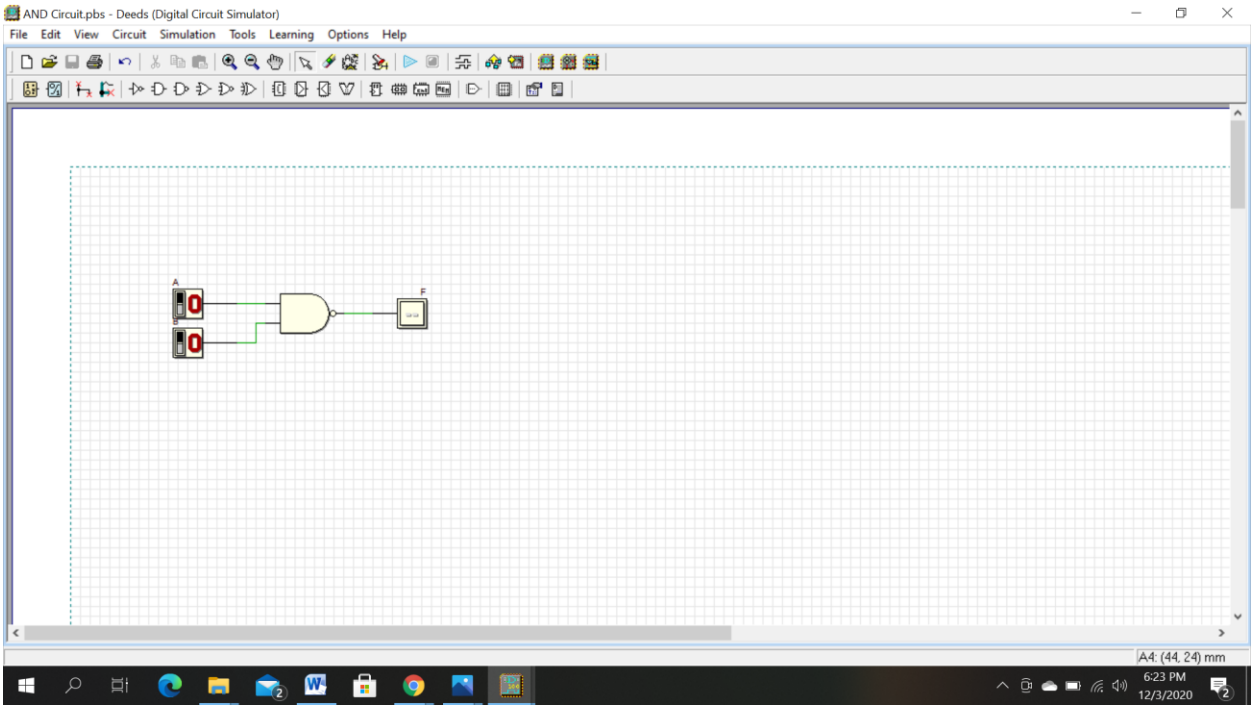
$\overline{0 \cdot 1} = \bar{0} = 1$

$\overline{1 \cdot 0} = \bar{0} = 1$

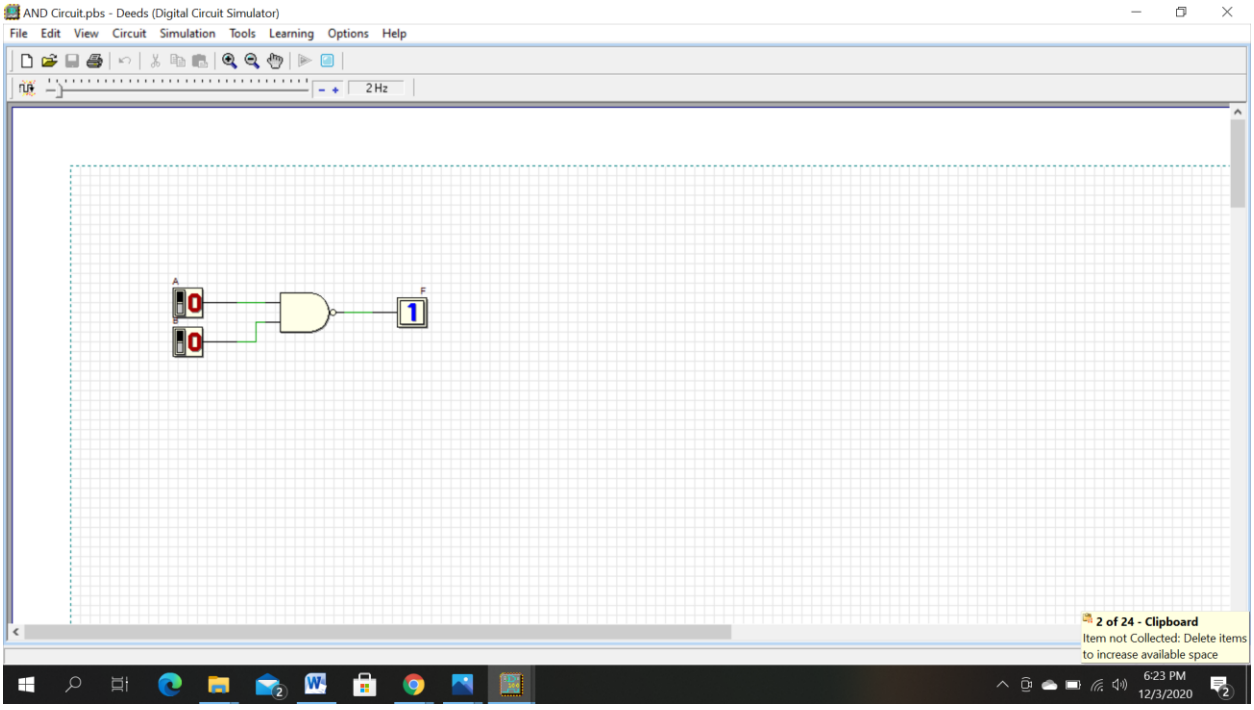
$\overline{1 \cdot 1} = \bar{1} = 0$.

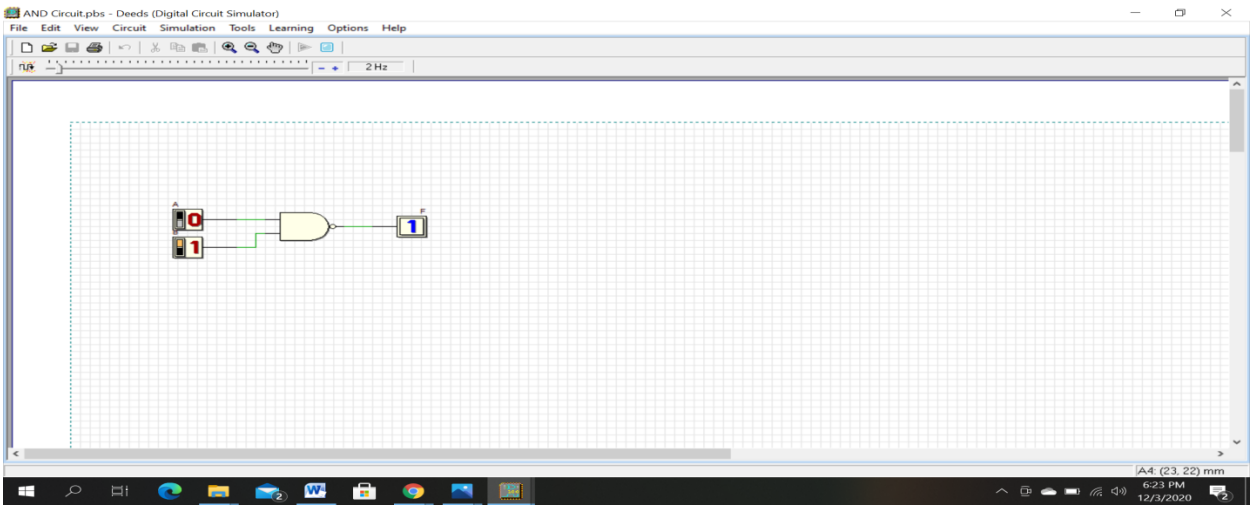
D.1 WITH DEEDS SIMULATOR

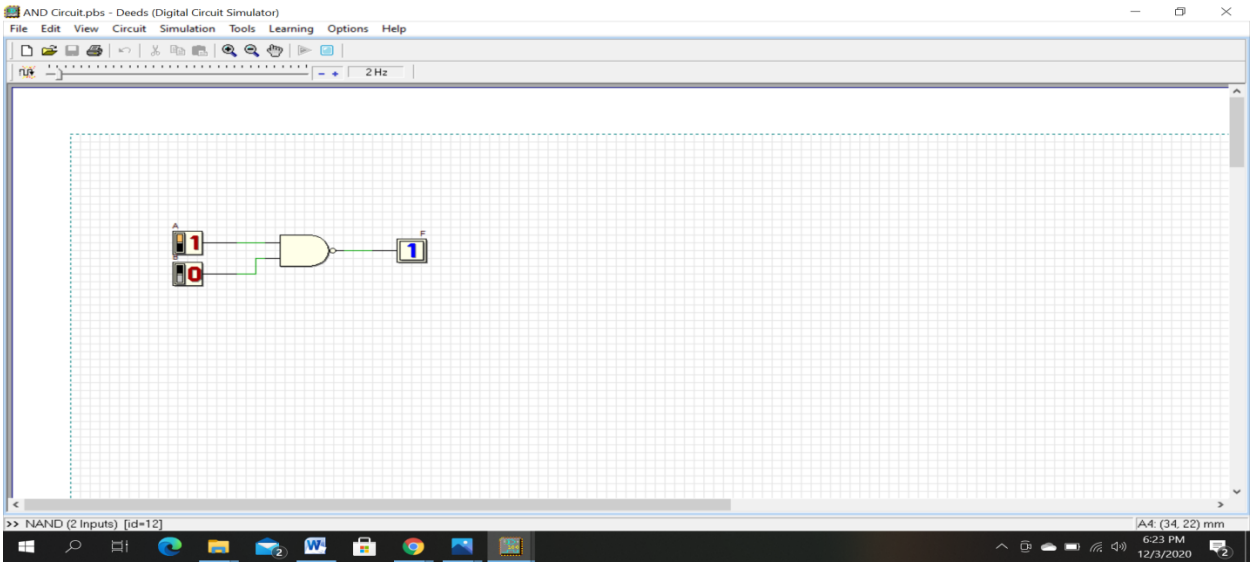
NAND GATE

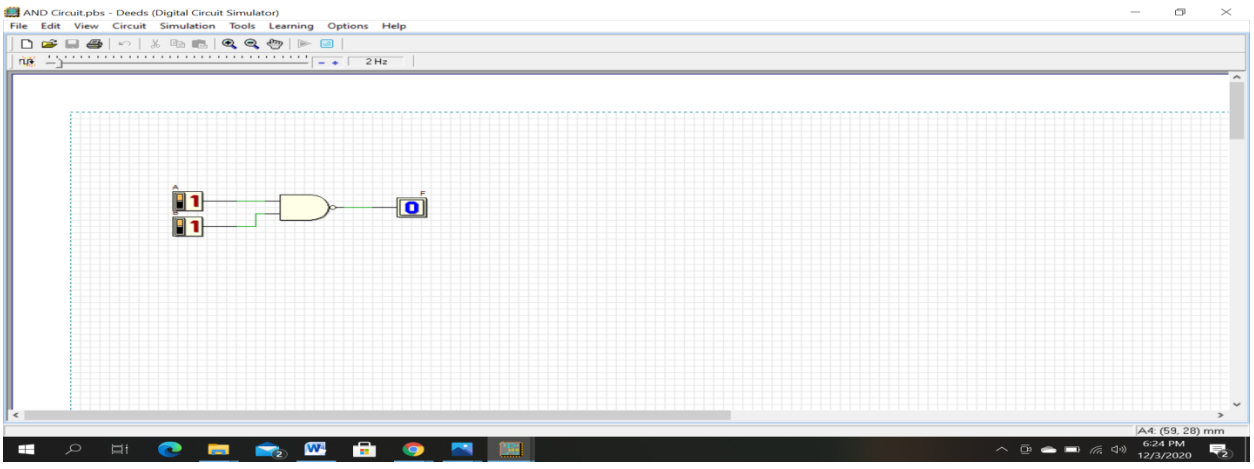


*TRUTH TABLE WITH DEEDS SIMULATOR

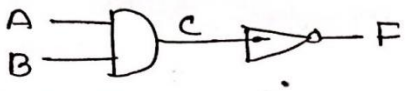



AND Circuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
A
0
1
F
1
A4: (23, 22) mm
6:23 PM
12/3/2020


AND Circuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
A
1
0
F
1
>> NAND (2 Inputs) [id=12]
A4: (34, 22) mm
6:23 PM
12/3/2020

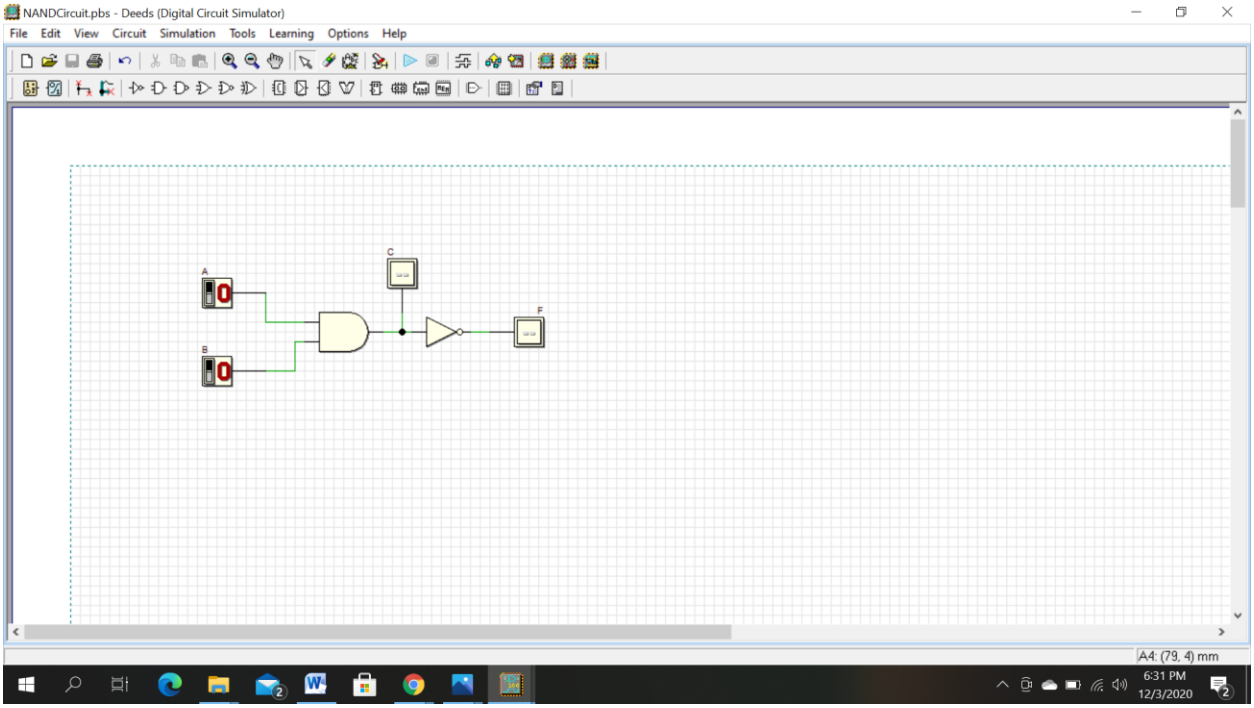

AND Circuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
A
1
1
F
0
A4: (59, 28) mm
6:24 PM
12/3/2020

D.2

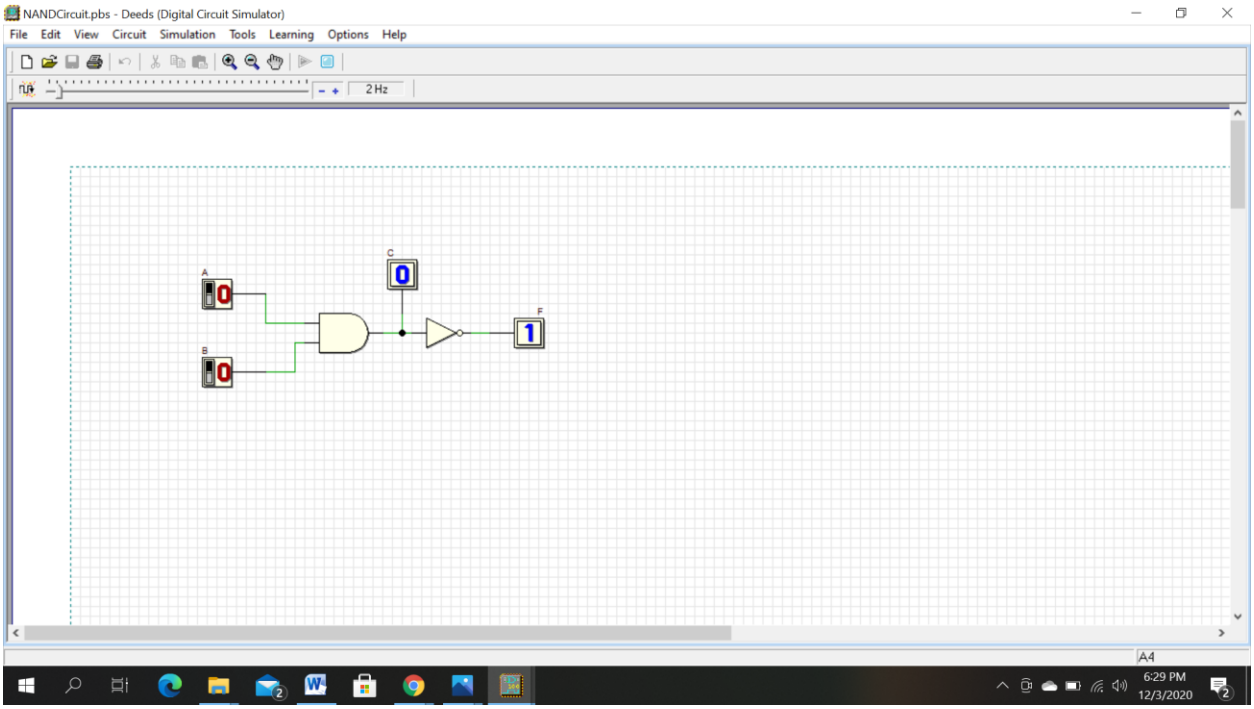


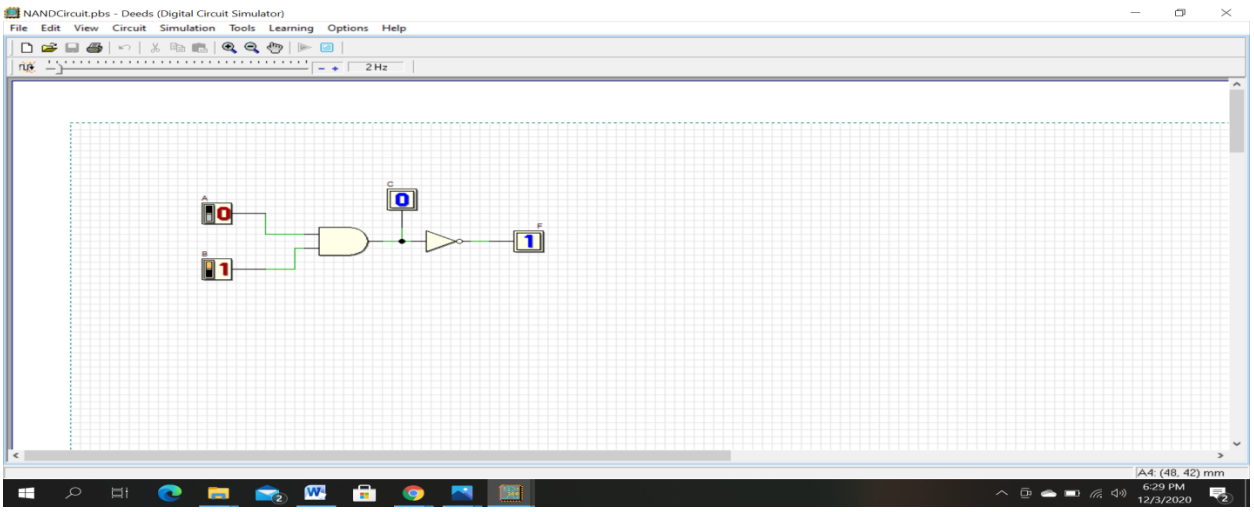
A	B	$C = A \cdot B$	$F = \overline{A \cdot B}$
0	0	0	$\bar{0} = 1$
0	1	0	$\bar{0} = 1$
1	0	0	$\bar{0} = 1$
1	1	1	$\bar{1} = 0$

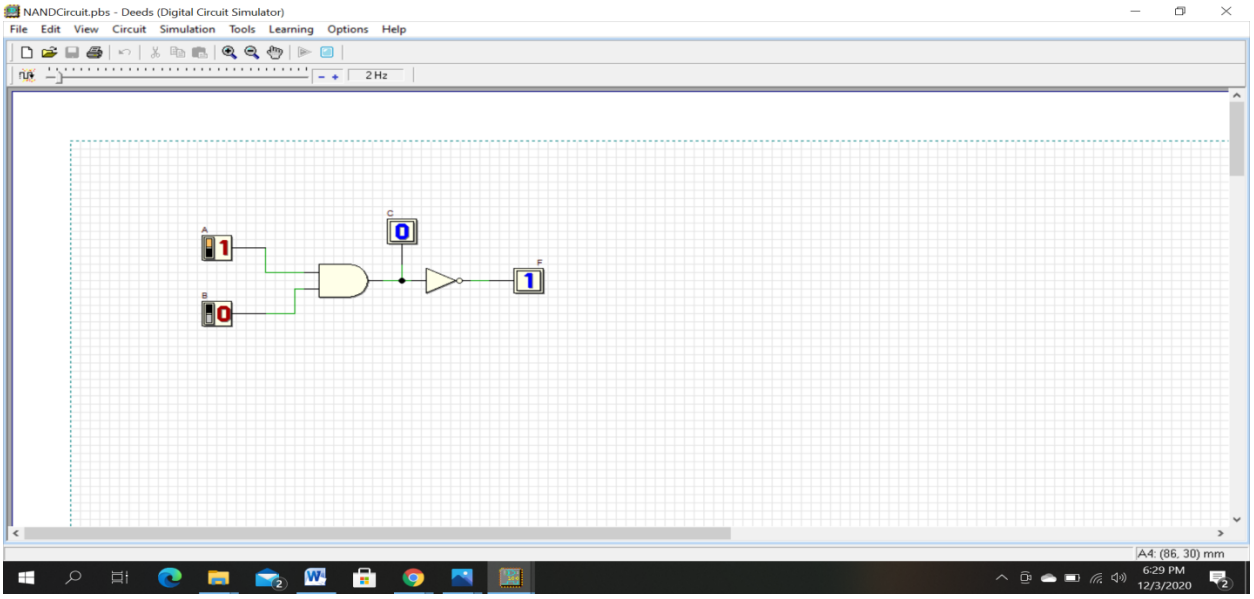
D.2 WITH DEEDS SIMULATOR

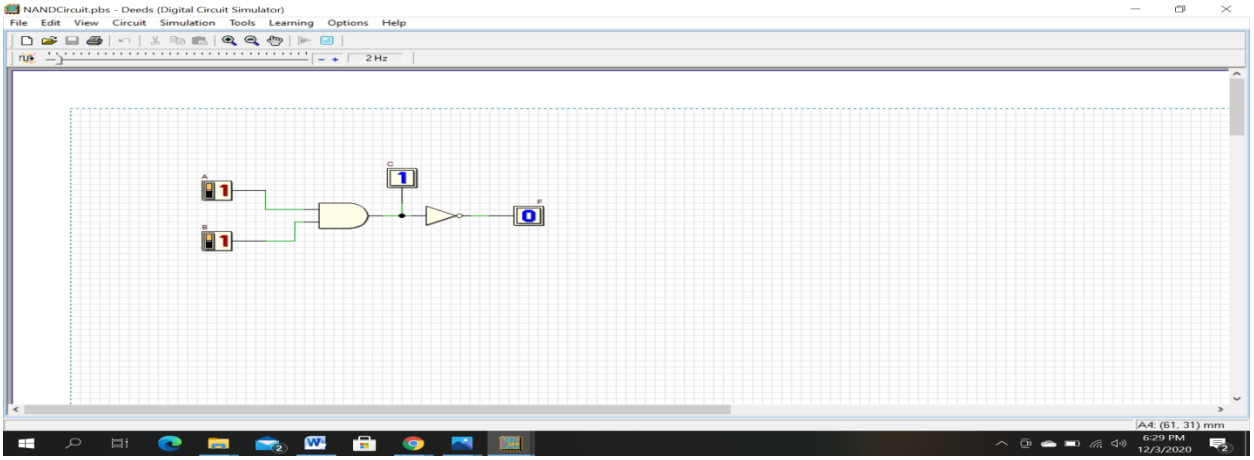


*TRUTH TABLE WITH DEEDS SIMULATOR



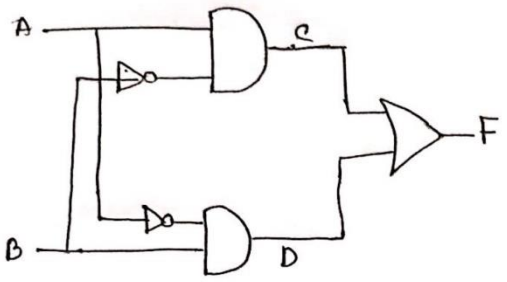

NANDCircuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
A
0
B
1
C
0
F
1
A4: (48, 42) mm
6:29 PM
12/3/2020


NANDCircuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
A
1
B
0
C
0
F
1
A4: (86, 30) mm
6:29 PM
12/3/2020


NANDCircuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
A
1
B
1
C
1
F
0
A4: (61, 31) mm
6:29 PM
12/3/2020

D.3

3.



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

$D = B \cdot \bar{A}$

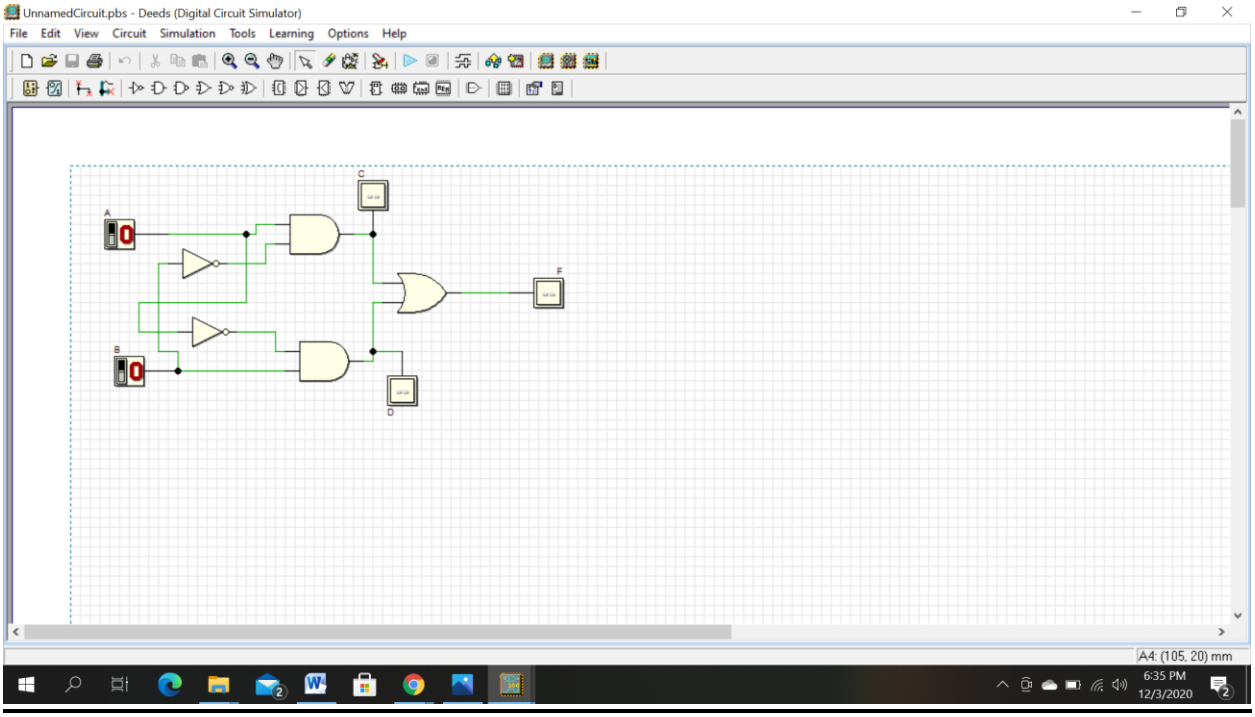
$F = A \cdot \bar{B} + B \cdot \bar{A}$.

4

Truth table

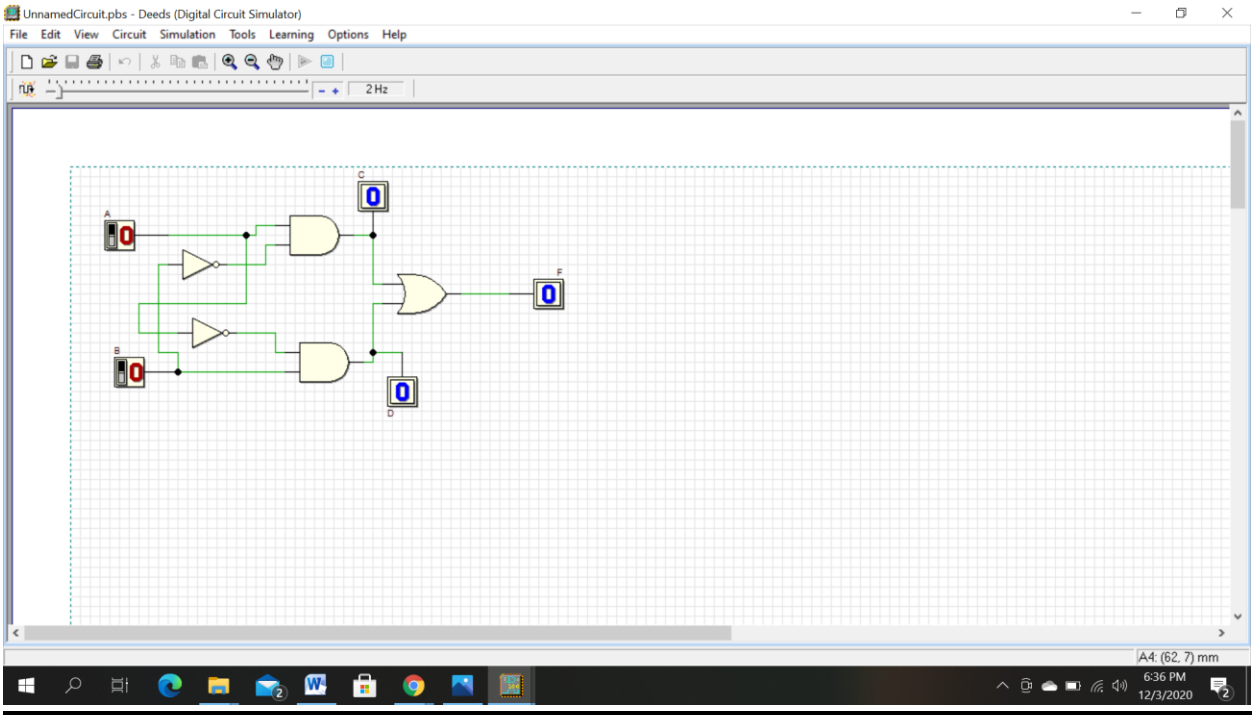
A	B	$c = A \cdot \bar{B}$	$D = B \cdot \bar{A}$	$F = A \cdot \bar{B} + \bar{A} \cdot B$
0	0	$0 \cdot 1 = 0$	$0 \cdot \bar{0} = 0 \cdot 1 = 0$	$0+0 = 0$
0	1	$0 \cdot \bar{1} = 0 \cdot 0 = 0$	$1 \cdot \bar{0} = 1 \cdot 1 = 1$	$0+1 = 1$
1	0	$1 \cdot \bar{0} = 1 \cdot 1 = 1$	$0 \cdot \bar{1} = 0 \cdot 0 = 0$	$1+0 = 1$
1	1	$1 \cdot \bar{1} = 1 \cdot 0 = 0$	$1 \cdot \bar{1} = 1 \cdot 0 = 0$	$0+0 = 0$

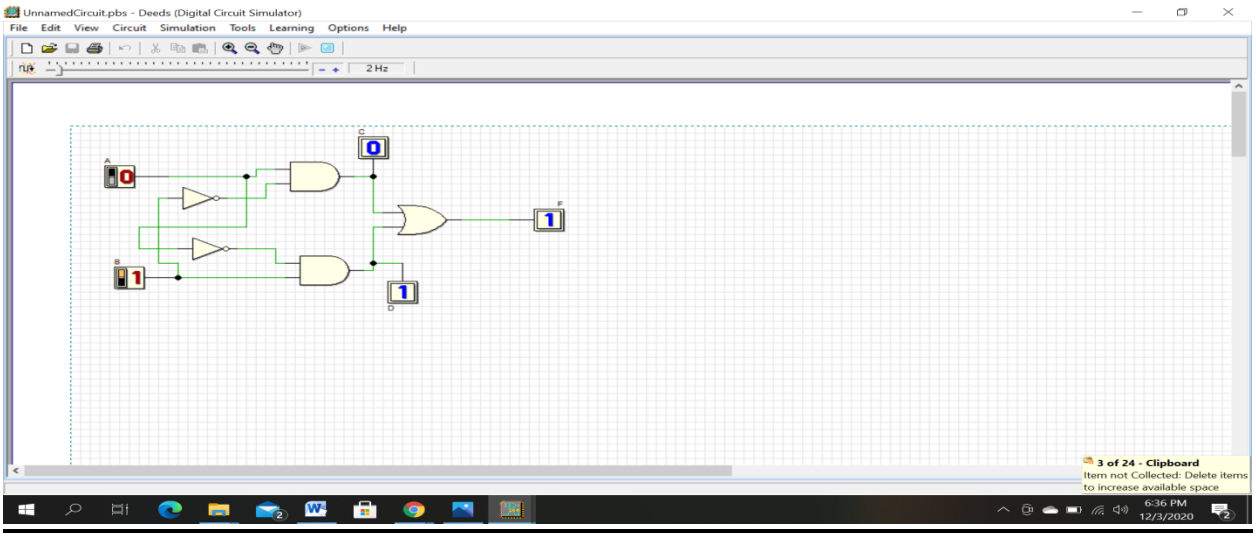
D.3 WITH DEEDS SIMULATOR

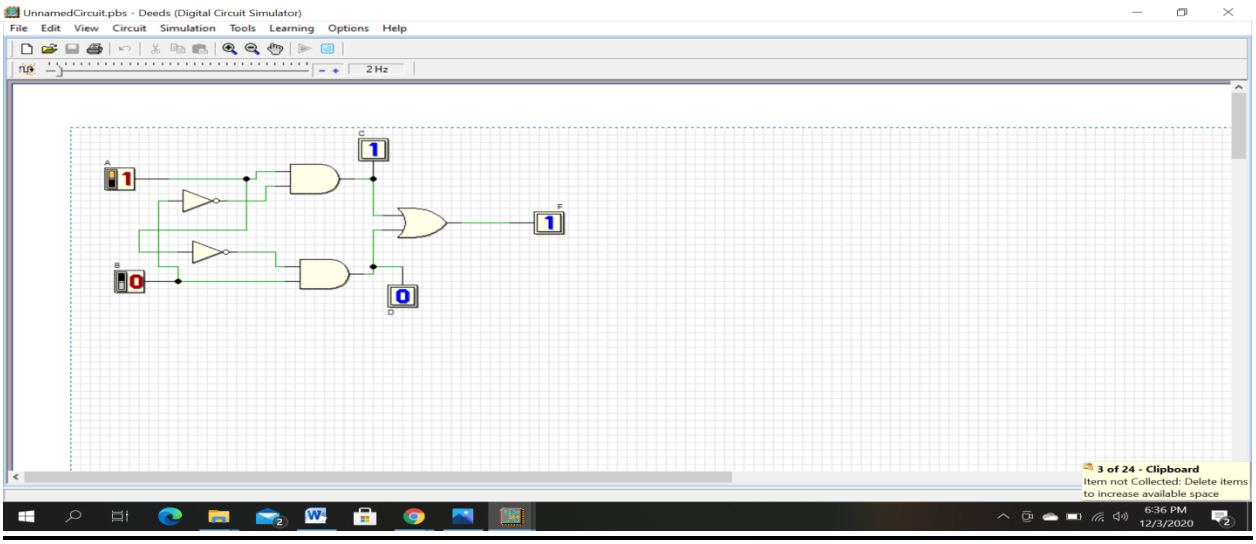


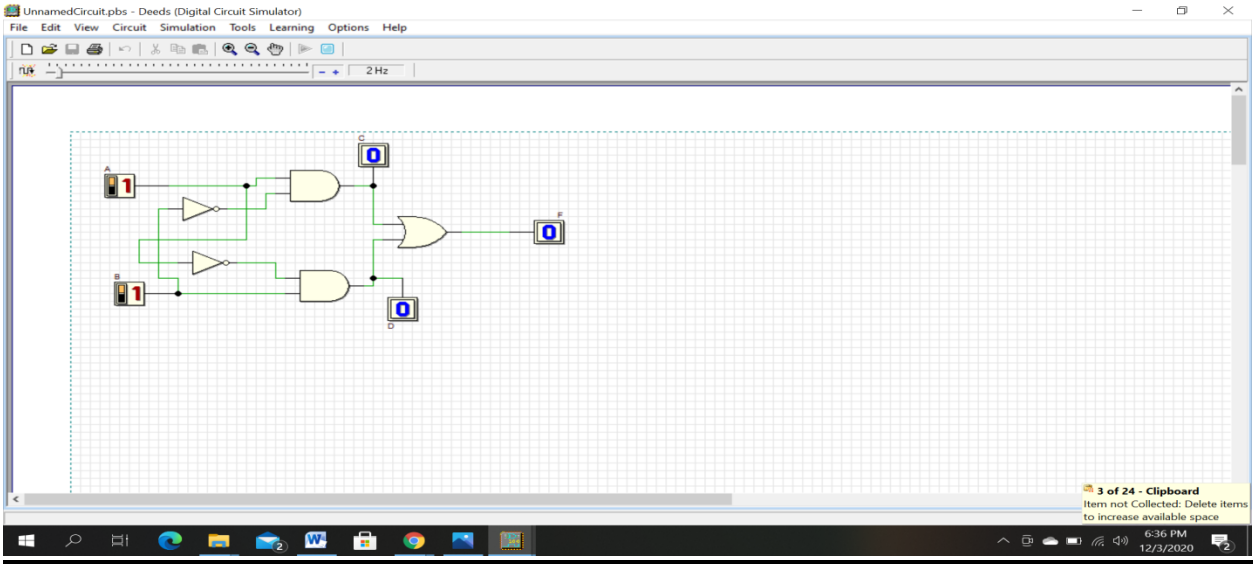
D.4

*TRUTH TABLE WITH DEEDS SIMULATOR




UnnamedCircuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
A 0
B 1
C 0
D 1
F 1
3 of 24 - Clipboard
Item not Collected: Delete items to increase available space
6:36 PM
12/3/2020


UnnamedCircuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
A 1
B 0
C 1
D 0
F 1
3 of 24 - Clipboard
Item not Collected: Delete items to increase available space
6:36 PM
12/3/2020


UnnamedCircuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
A 1
B 1
C 0
D 0
F 0
3 of 24 - Clipboard
Item not Collected: Delete items to increase available space
6:36 PM
12/3/2020

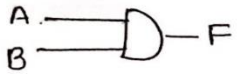
E-LABTORY WORK

PART-1

E- Laboratory work

Part 1

①



A	B	F = A · B
0	0	0
0	1	0
1	0	0
1	1	1

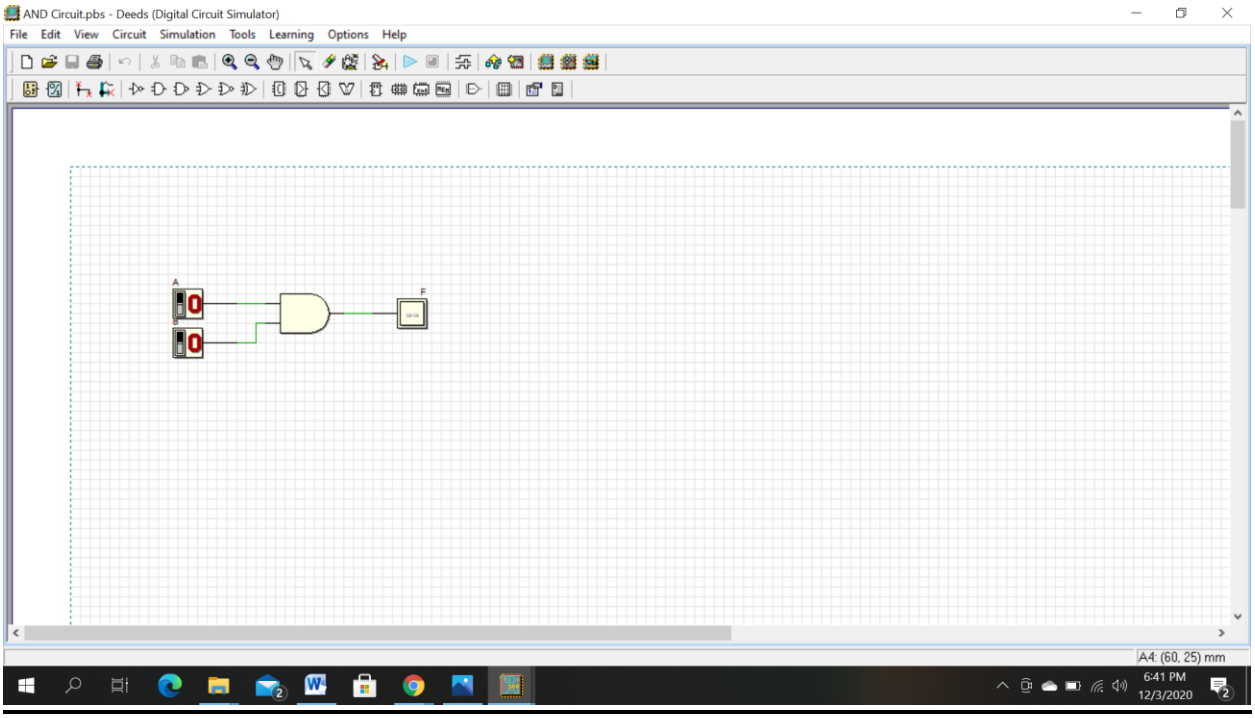
Truth table-5

②

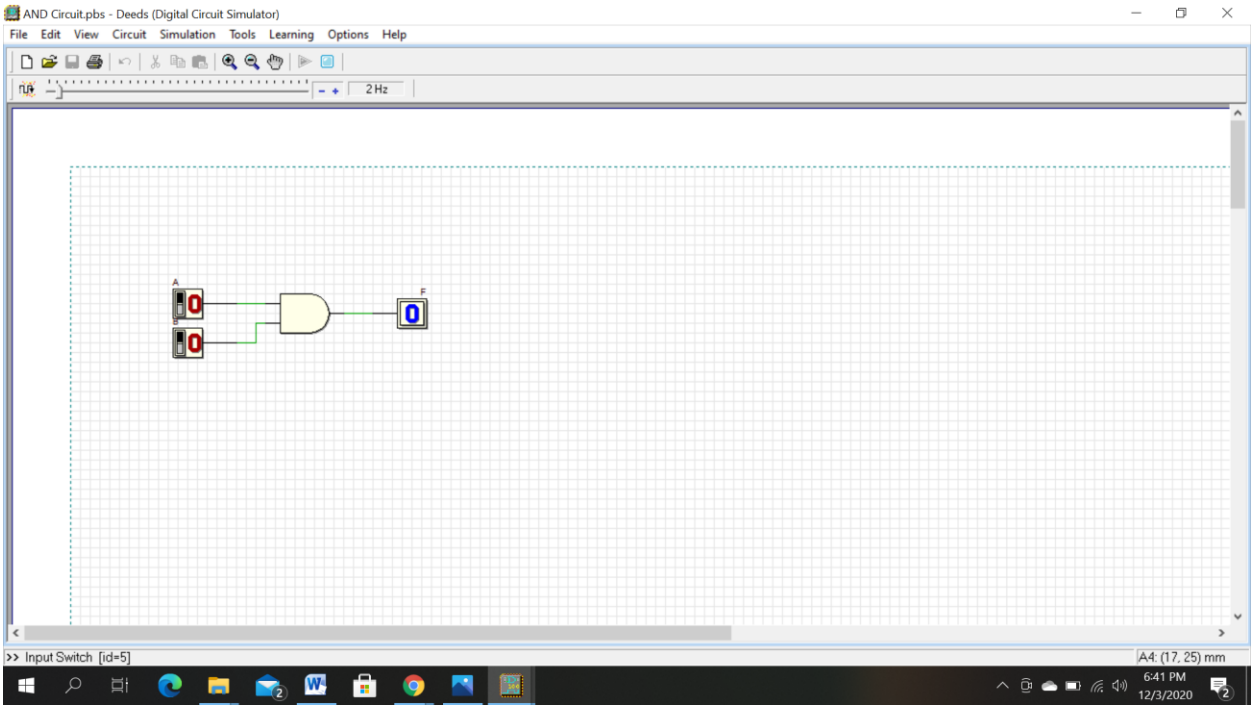
The truth table 5 ~~should~~ match the truth table 1 prepared in the preliminary work.

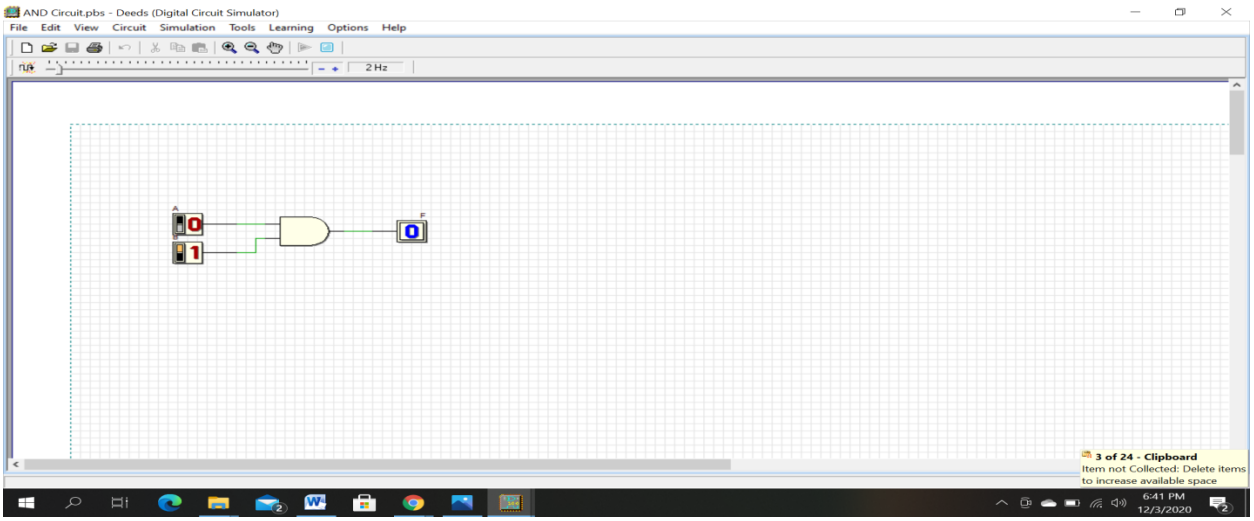
So, After use deeds, we can tell that, The truth table 5 and table 1, both are match. Both are same.

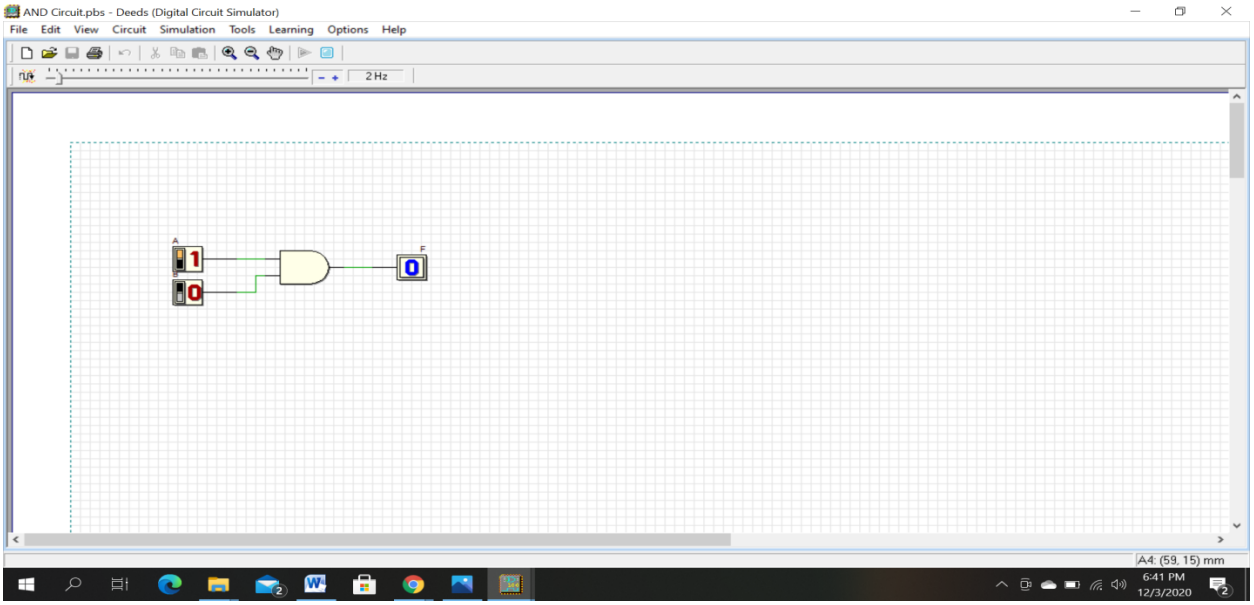
E.PART 1.1 WITH DEEDS SIMULATOR

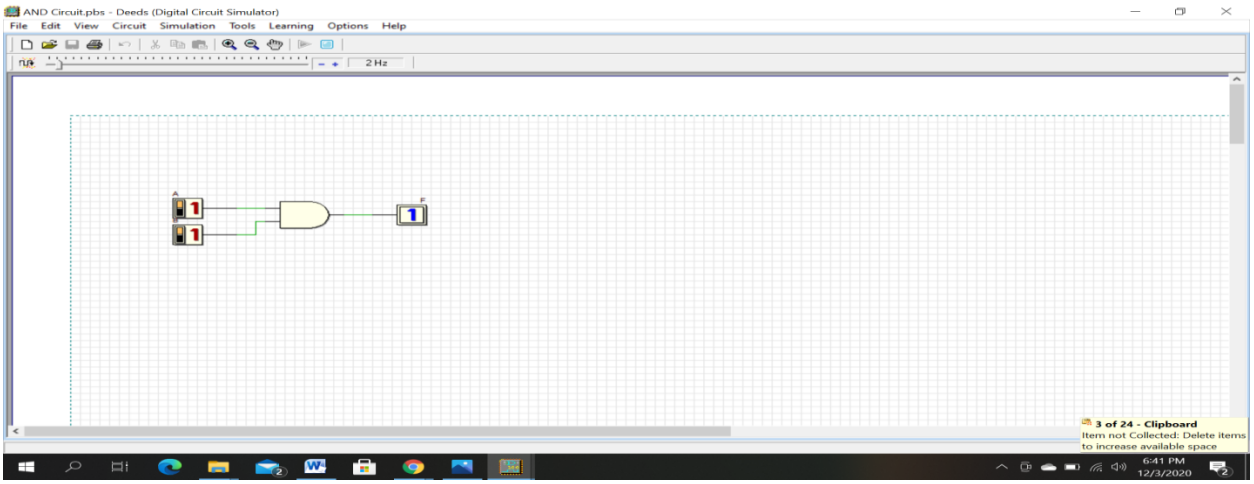


- E-PART 1.2 TRUTH TABLE WITH DEEDS SIMULATOR




AND Circuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
A
0
1
F
0
3 of 24 - Clipboard
Item not Collected: Delete items to increase available space
6:41 PM
12/3/2020

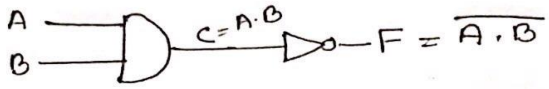

AND Circuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
A
1
0
F
0
A4: (59, 15) mm
6:41 PM
12/3/2020


AND Circuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
A
1
1
F
1
3 of 24 - Clipboard
Item not Collected: Delete items to increase available space
6:41 PM
12/3/2020

E.PART 2

Part-2

(3.)



4

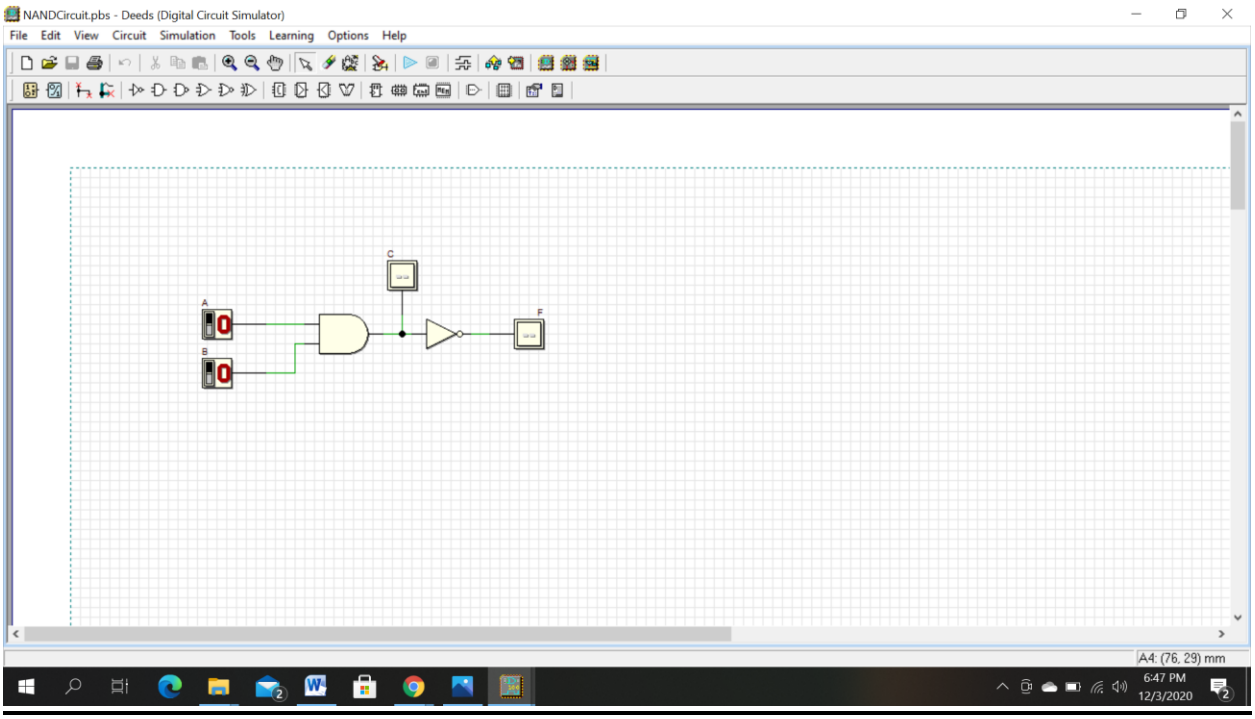
A	B	C=A·B	F= $\overline{A \cdot B}$
0	0	0	$\bar{0} = 1$
0	1	0	$\bar{0} = 1$
1	0	0	$\bar{0} = 1$
1	1	1	$\bar{1} = 0$.

Truth table-6

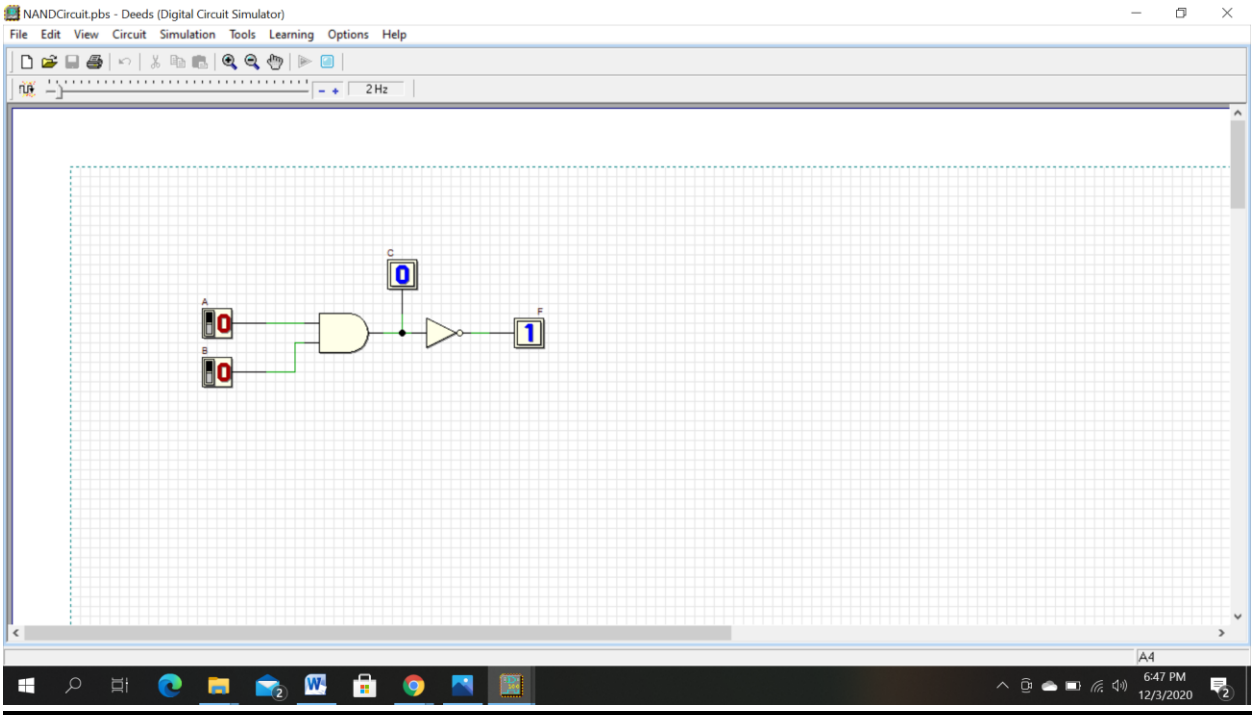
5

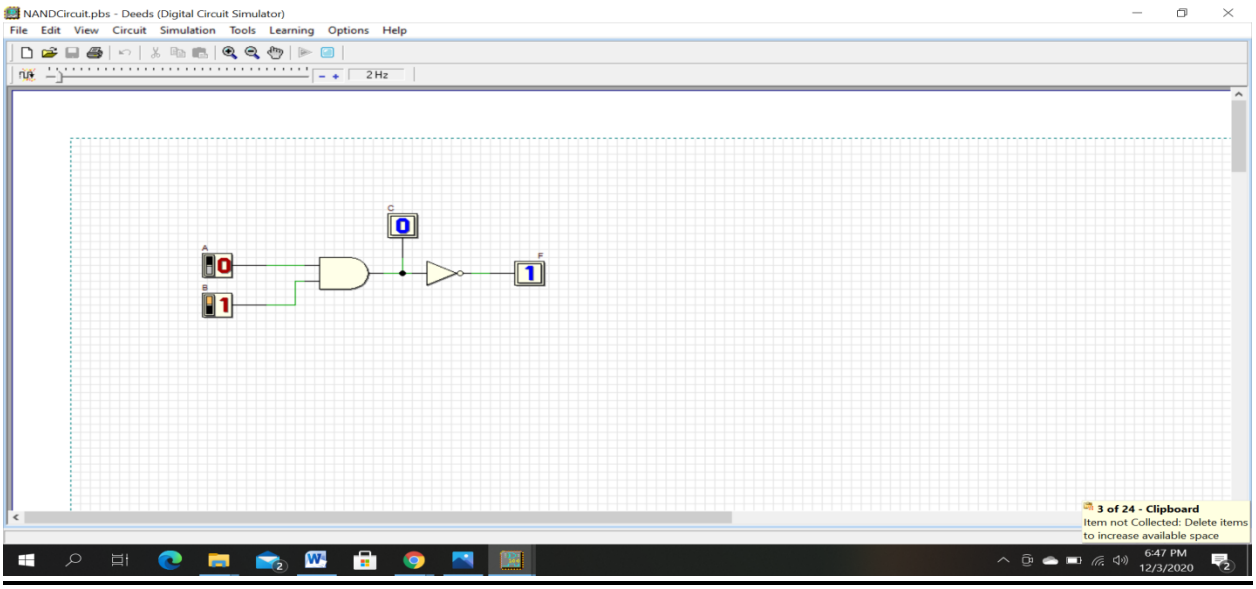
Compare Truth tabk 6 to Truth table 2 both are same. both are NAND gate.

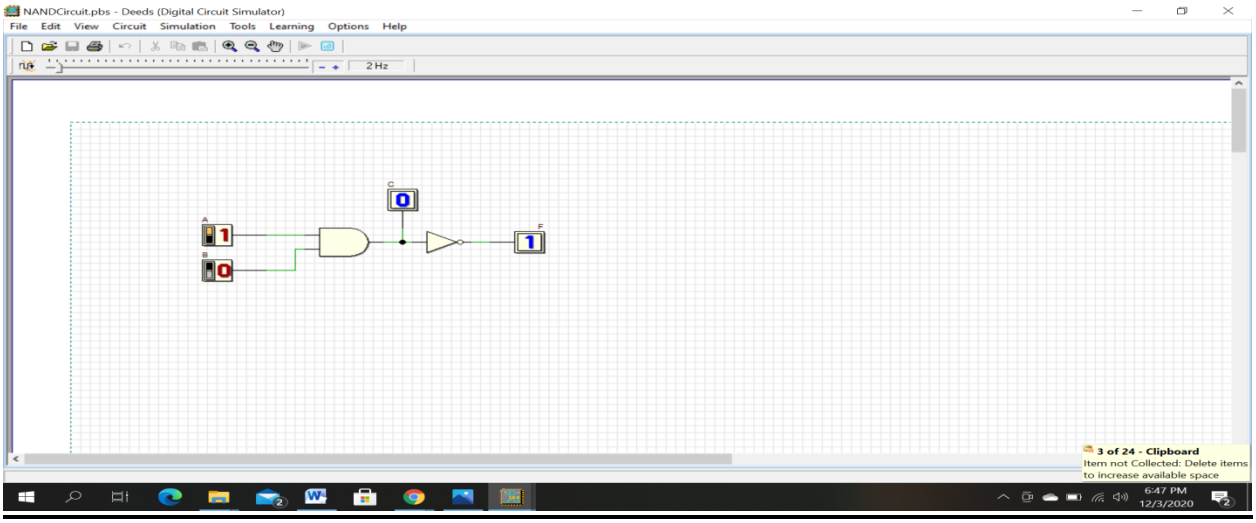
E.PART 2.3 WITH DEEDS SIMULATOR

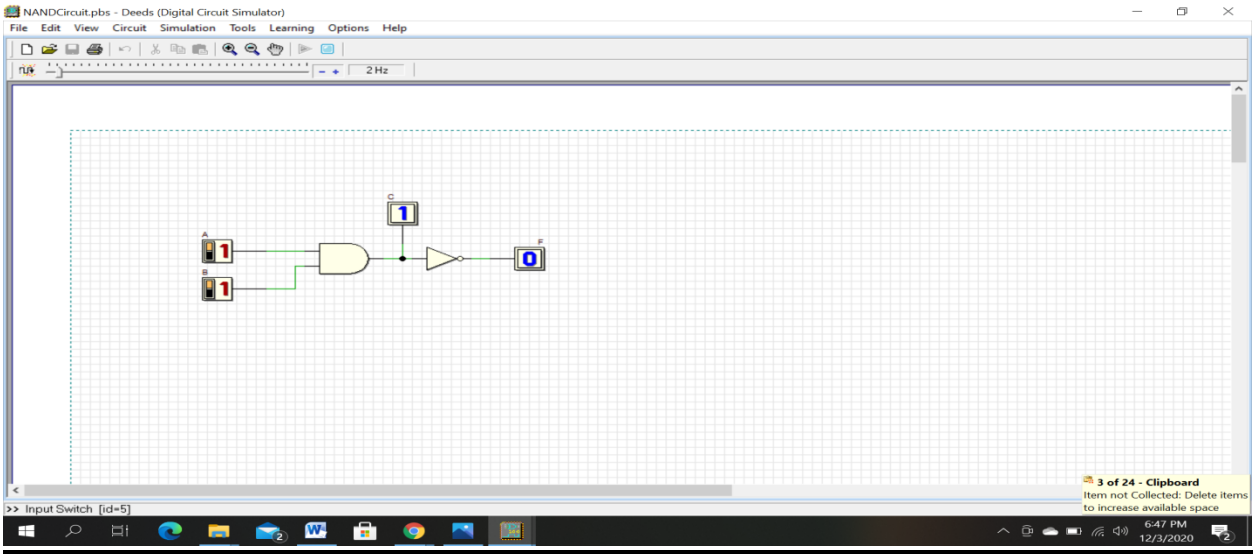


E.PART 2.4 *TRUTH TABLE WITH DEEDS SIMULATOR



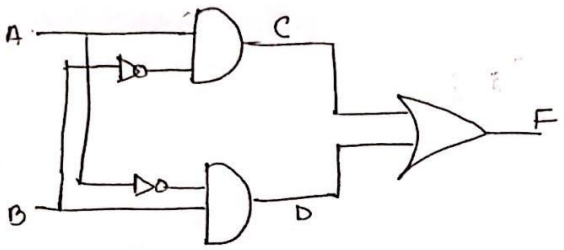

NANDCircuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
C
0
A
0
B
1
F
1
3 of 24 - Clipboard
Item not Collected: Delete items to increase available space
6:47 PM
12/3/2020


NANDCircuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
C
0
A
1
B
0
F
1
3 of 24 - Clipboard
Item not Collected: Delete items to increase available space
6:47 PM
12/3/2020


NANDCircuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
C
1
A
1
B
1
F
0
3 of 24 - Clipboard
Item not Collected: Delete items to increase available space
>> Input Switch [id=5]
6:47 PM
12/3/2020

E.PART 3

Part -3



⑥

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

$D = \bar{A} \cdot B$

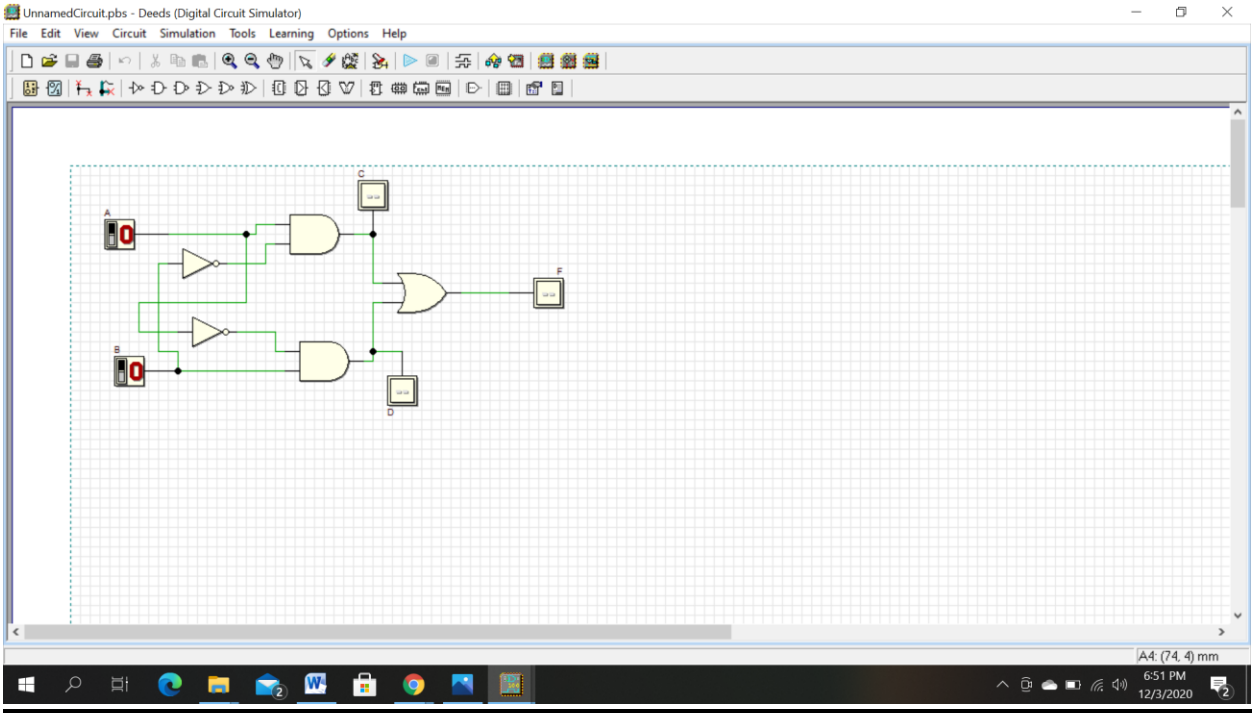
$F = A \cdot \bar{B} + \bar{A} \cdot B$.

⑦

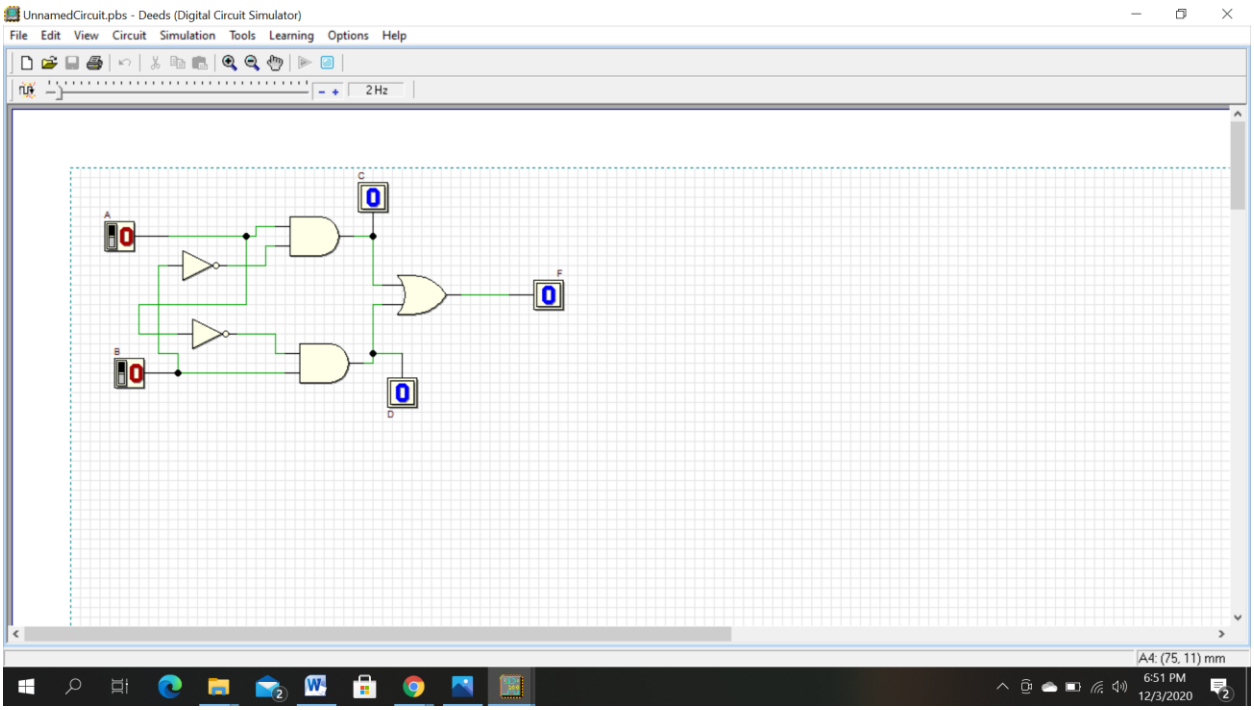
A	B	$C = A \cdot \bar{B}$	$D = \bar{A} \cdot B$	$F = A \cdot \bar{B} + \bar{A} \cdot B$
0	0	0	0	0
0	1	0	1	1
1	0	1	0	1
1	1	0	0	0

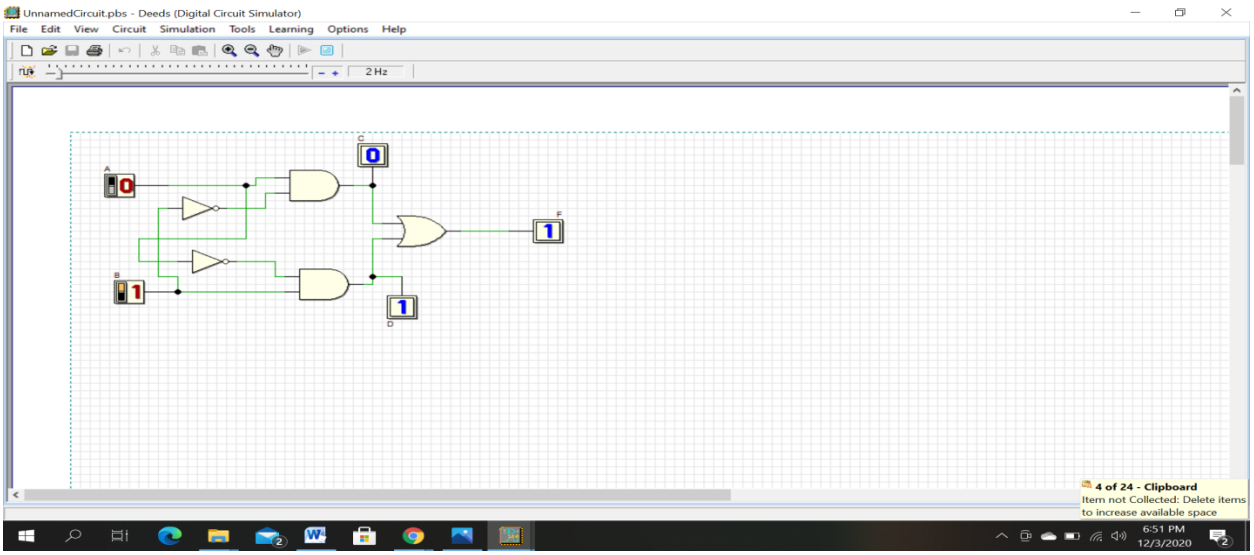
⑧ the Single gate does circuit 3 represent "OR GATE".

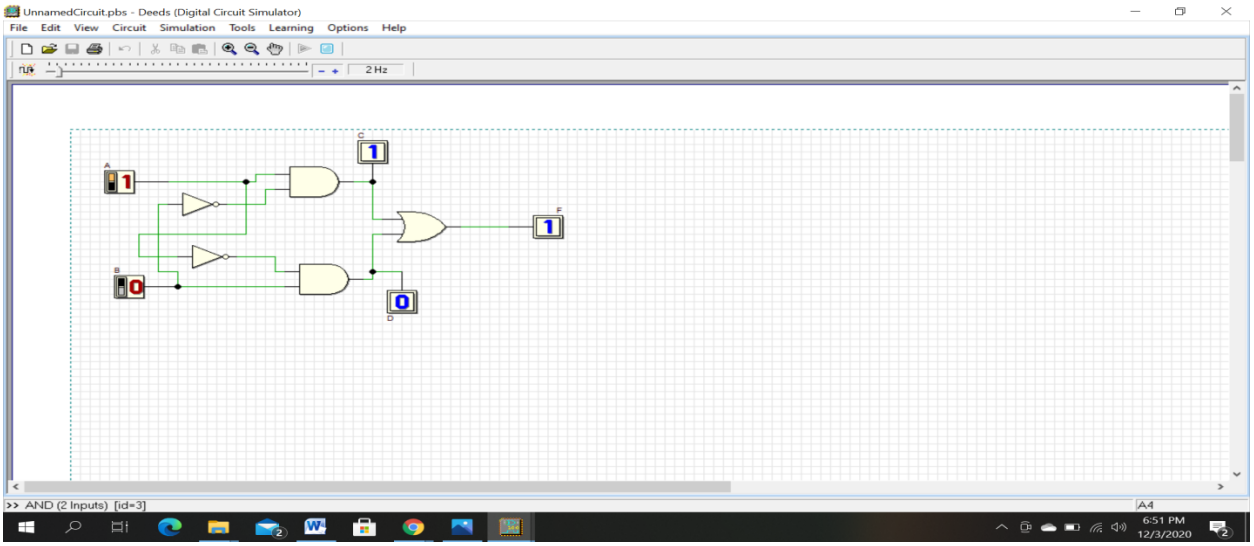
E.PART 3.6 WITH DEEDS SIMULATOR

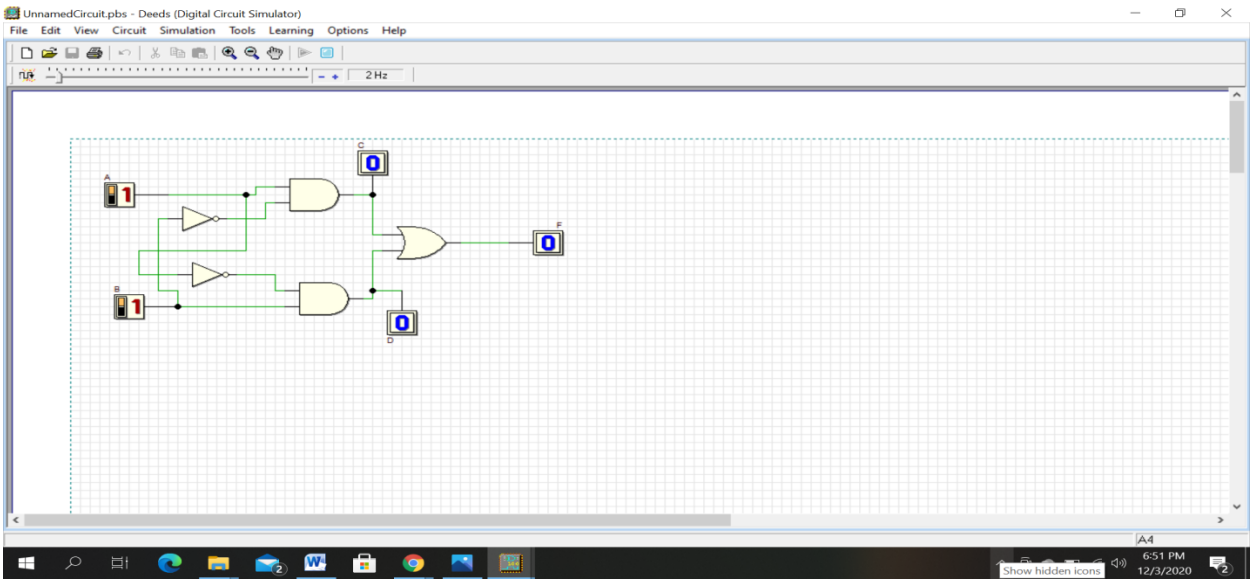


E.PART 3.7 *TRUTH TABLE WITH DEEDS SIMULATOR




UnnamedCircuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
A
B
C
D
F
0
1
1
1
4 of 24 - Clipboard
Item not Collected: Delete items to increase available space
6:51 PM
12/3/2020


UnnamedCircuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
A
B
C
D
F
1
0
1
1
0
>> AND (2 Inputs) [id=3]
A4
6:51 PM
12/3/2020


UnnamedCircuit.pbs - Deeds (Digital Circuit Simulator)
File Edit View Circuit Simulation Tools Learning Options Help
2 Hz
A
B
C
D
F
1
1
0
0
0
A4
Show hidden icons
6:51 PM
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