Instruction:

Complete all questions in **1 hour.**

- Draw the logic diagram of the following gates using logsim and complete the

Truth tables.

a. AND

A	B	A.B
0	0	0
0	1	0
1	0	0
1	1	1

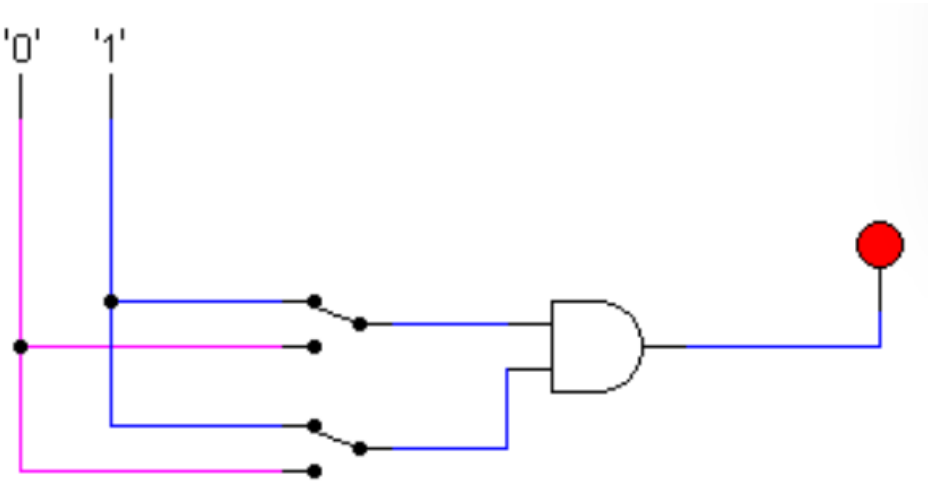

Fig 1:AND GATE

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b. NOR (do the same as in Q No a for all of the following)

A	B	(A+B)'
0	0	1
0	1	0
1	0	0
1	1	0

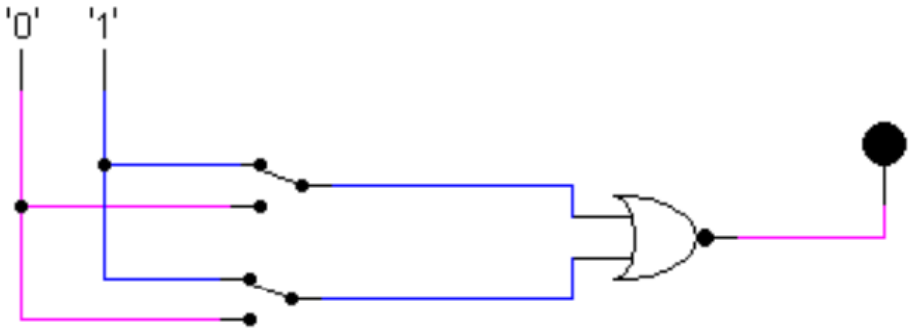

fig 2:NOR GATE

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c. OR

A	B	(A+B)
0	0	0
0	1	1
1	0	1
1	1	1

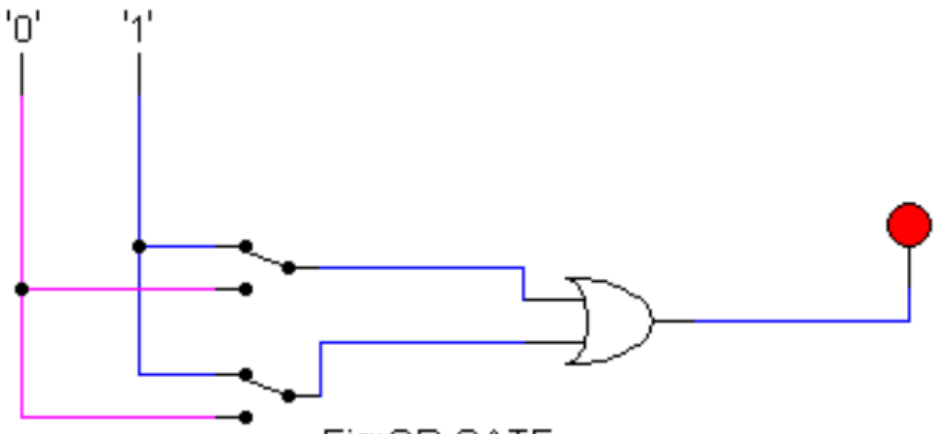

Fig:OR GATE
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d. NAND (using NOT and AND)

A	B	(A.B)'
0	0	1
0	1	1
1	0	1

1	1	0

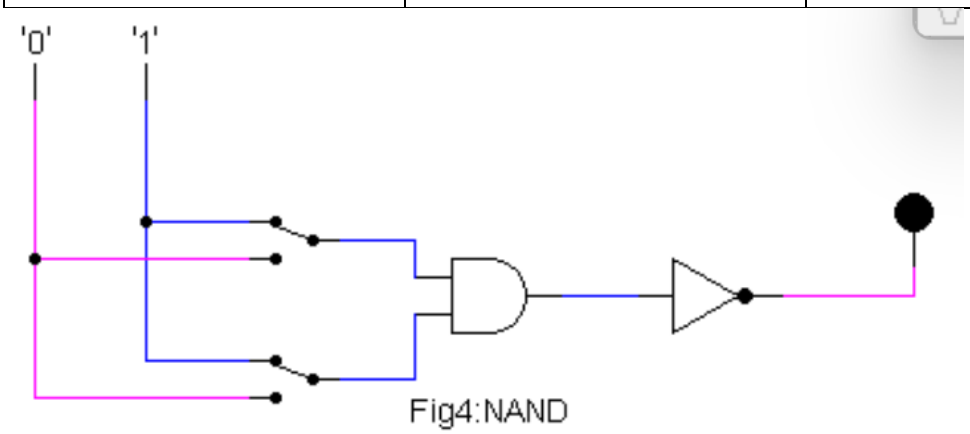

Fig4:NAND

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e. XOR using AOI

A	**B**	**AB'+A'B**
0	0	0
0	1	1
1	0	1
1	1	0

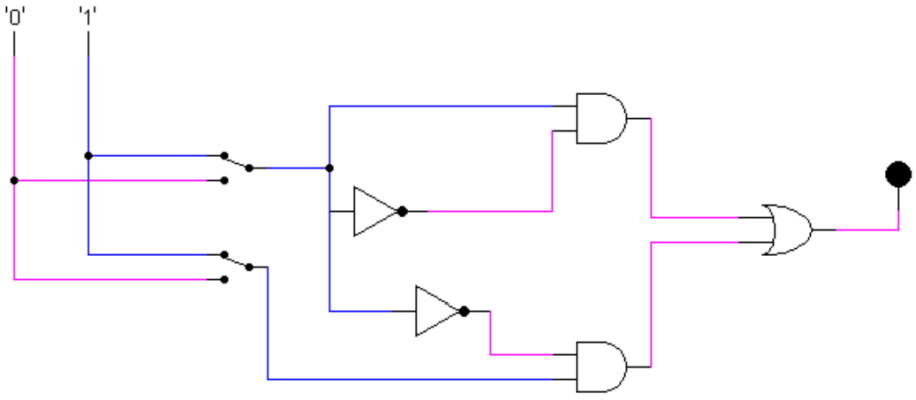

Fig 5:XOR

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2. Use LogSim to build the equivalent circuit for the following Boolean equations.

Prove that the expressions are equivalent by computing truth table.

(A+B)' =A'.B'

A	B	(A+B)'	A' . B'
0	0	1	1
0	1	0	0
1	0	0	0
1	1	0	0

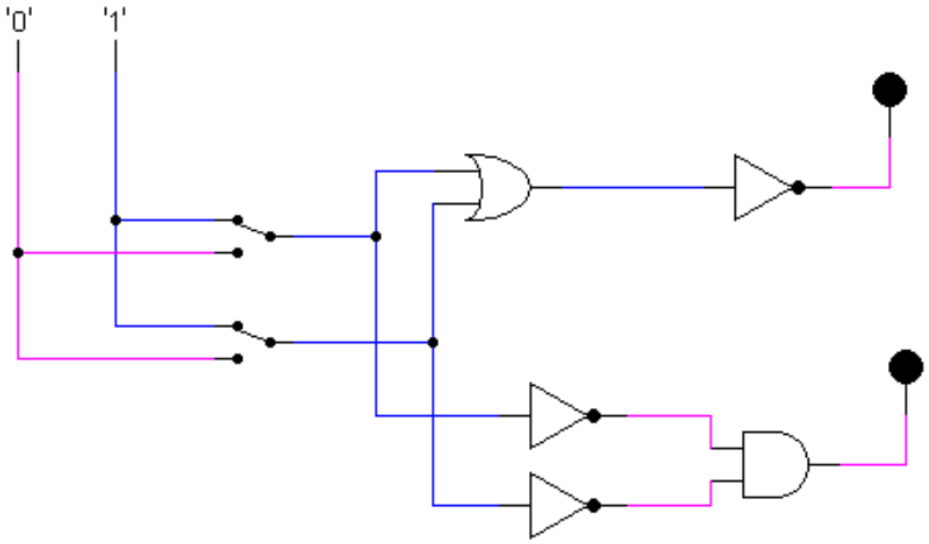

Fig 6

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3. Draw the following circuit of half adder using LogSim.

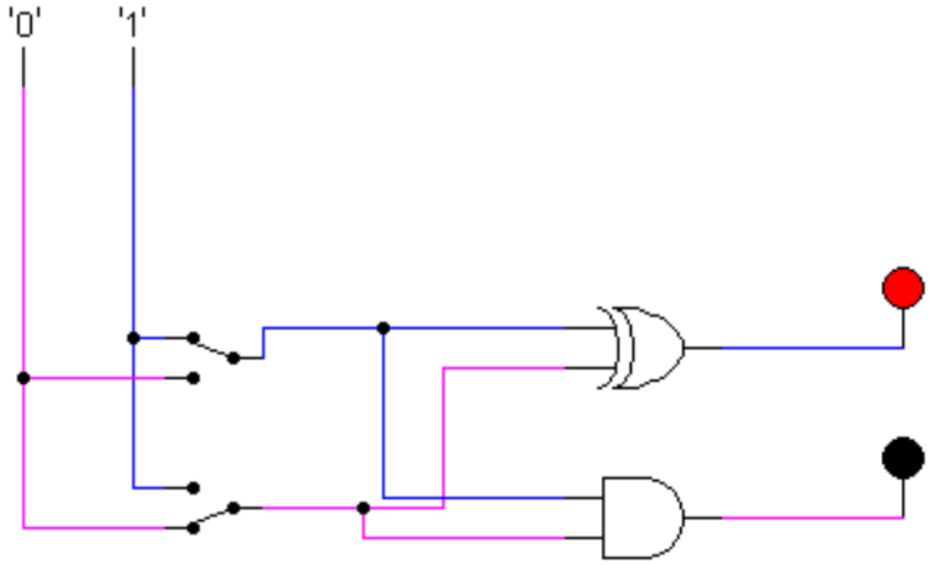

Fig:7

Prepared By:Aman Kumar Sah

A	B	Sum	Carry
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

4. Draw full adder using Logsim and construct truth table.

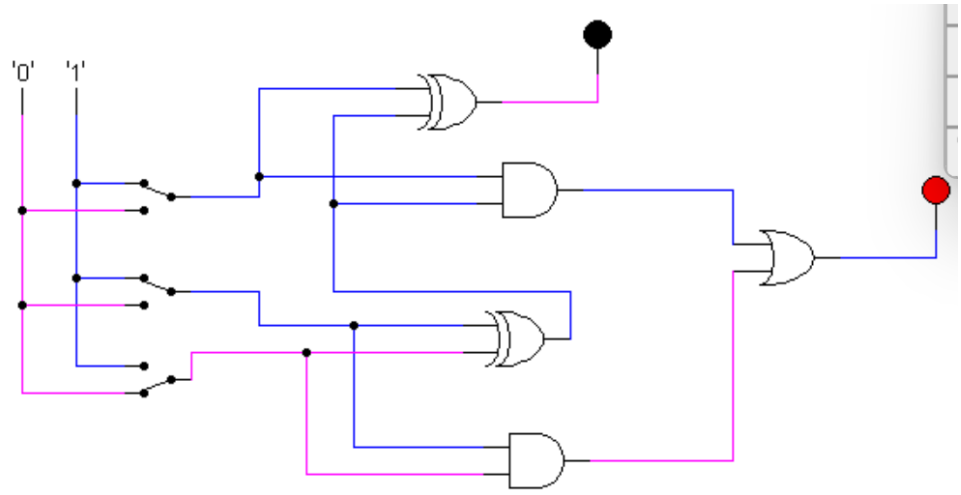

Fig:Full adder

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A	B	C	Sum	Carry out
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

5.Draw the logic circuit for the following Boolean equations using logsim simulator.

- AB+C

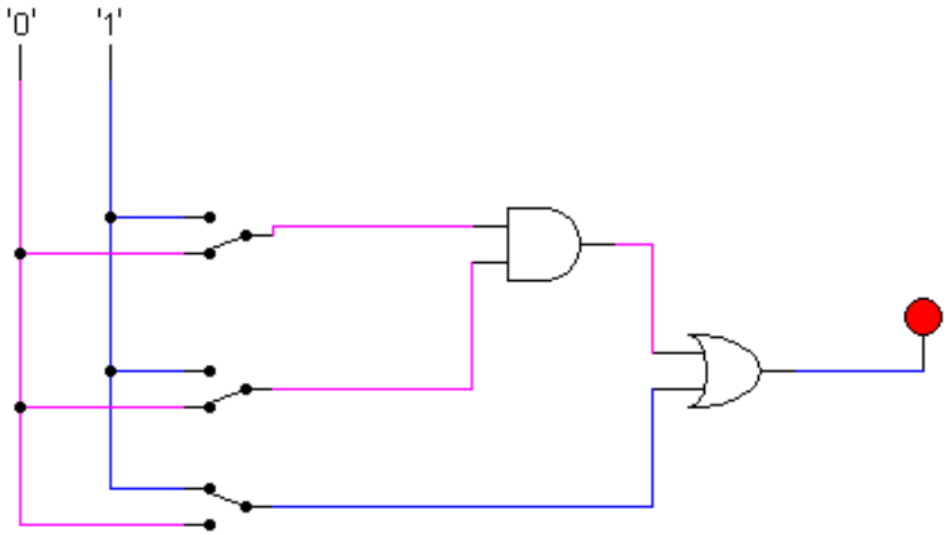

Fig 5.1
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- A(B+C)

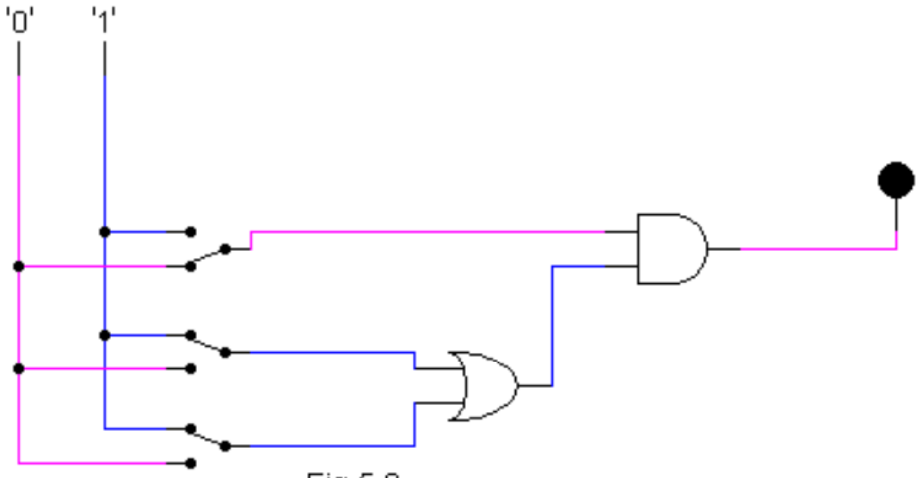

Fig 5.2
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- X’Y’Z’

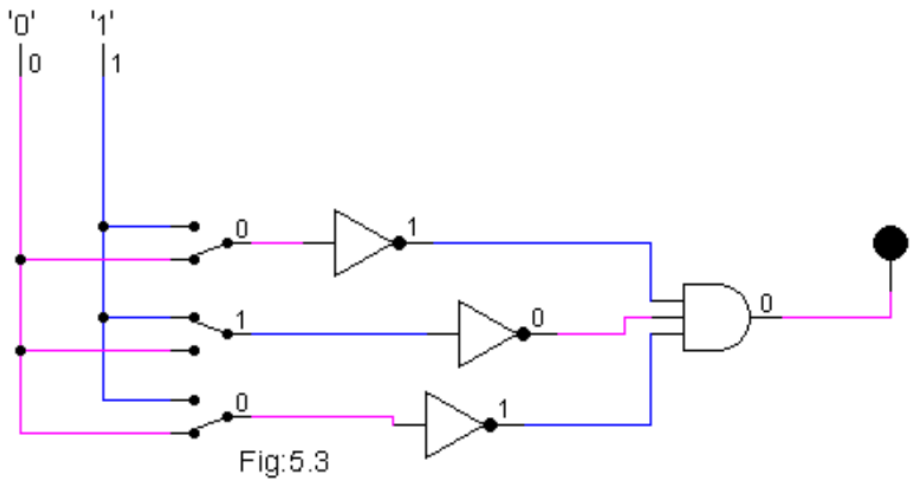

Fig:5.3

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