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Exp9- Logic gates

AIM: Toverify the truth tables of NOT, AND and OR gates using Diodes and Transistor.

COMPONENTS: Diodes, Transistor, Resistors and LED, DC Power supply, multi-meter.

Simulation tool:https://www.tinkercad.com/

Use this link to simulate the circuit diagrams which are shown below for NOT, AND, and OR gates.

PROCEDURE:

1. Use components and make the circuit connections as per the circuit diagram shown below.
2. Turn on power to your experimental circuit.
3. Apply all four possible combinationsof input voltagesatAandB,Recordtheoutputvoltageandstatusof LED.
4. For each input combination, note the logic state of the output, as indicated by the LED (ON = 1; OFF = 0), and record that result in the table.
5. Compare your results with the truth table of a logic "NOT"/ "AND"/"OR"/ operation.
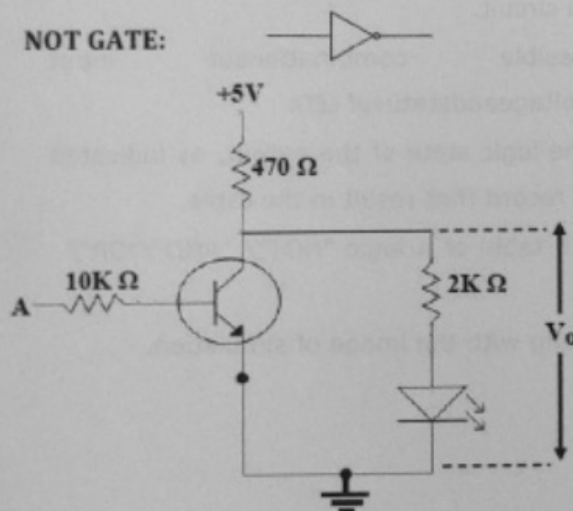6. Submit the worksheets in to LMS along with the image of simulation.

CIRCUIT DIAGRAM:

AND GATE:
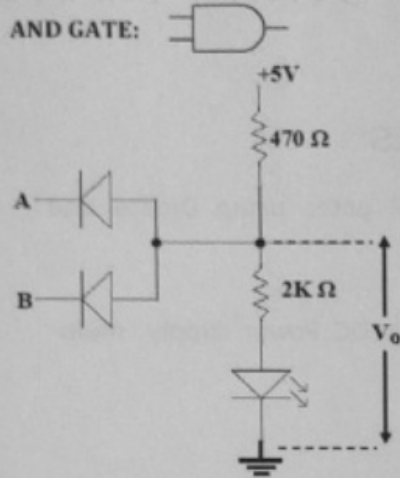
Truth table		
A	B	Y = A ·B
0	0	0
0	1	0
1	0	0
1	1	1

Logic status (LED)		
A	B	Y = A ·B
0	0	O
0	1	O
1	0	O
1	1	1

Logic status (Volts)		
A	B	Y = A ·B
0	0	0· 6
0	1	0· 6
1	0	0· 6
1	1	5· 0

NOT GATE:

Truth table	
A	Y=$\bar{A}$
0	1
1	0

Logic status (LED)	
A	Y=$\bar{A}$
0	1
1	O

Logic status (Volts)	
A	Y=$\bar{A}$
0	5·0
1	0·1

OR GATE:
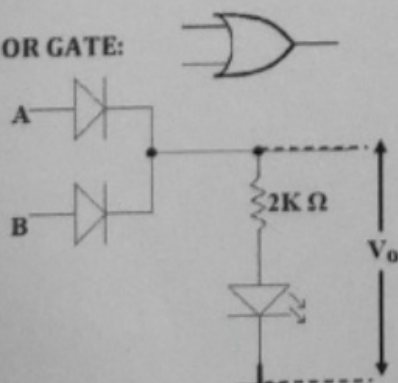
Truth table

A	B	Y = A + B
0	0	0
0	1	1
1	0	1
1	1	1

Logic status (LED)

A	B	Y = A + B
0	0	◯
0	1	⊥
1	0	⊥
1	1	⊥

Logic status (Volts)

A	B	Y = A + B
0	0	O
0	1	4.3
1	0	4.3
1	1	4.3

Result:

The truthtables of NOT, AND,and ORgates are verified. Respective input and output voltages are measured and are tabulated.

Nate: Submit the worksheet in to LMS along with the simulation image.