LAB ASSIGNMENT – 10

Course: Basic Electrical and Electronics Engineering

Course Code: EEE1001

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Slot: L-19+L-20

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Registration Number: 18BIT0272

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Ex. No.:4 Date: 25/10/2018

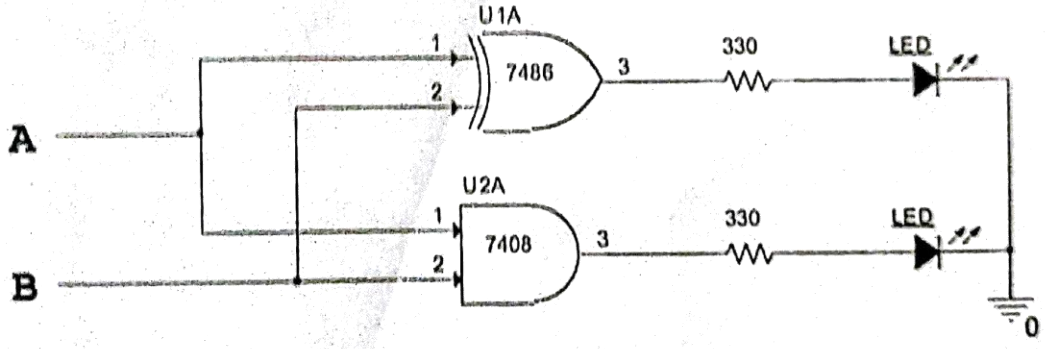
Design of Half Adder Circuit using gates

Aim: Implement & verify half-adder circuit.

Apparatus Required:

S. No.	Name of the apparatus	Range / Type	Quantity
1	7486 gate	-	1 No.
2	7408 gate	-	1 No.
3	LED	-	2 Nos.
4	RPS	0 – 15 V	1 No.
5	Resistor	330 Ω	2 Nos.
6	Breadboard	-	1 No.
7	Wires	-	Few

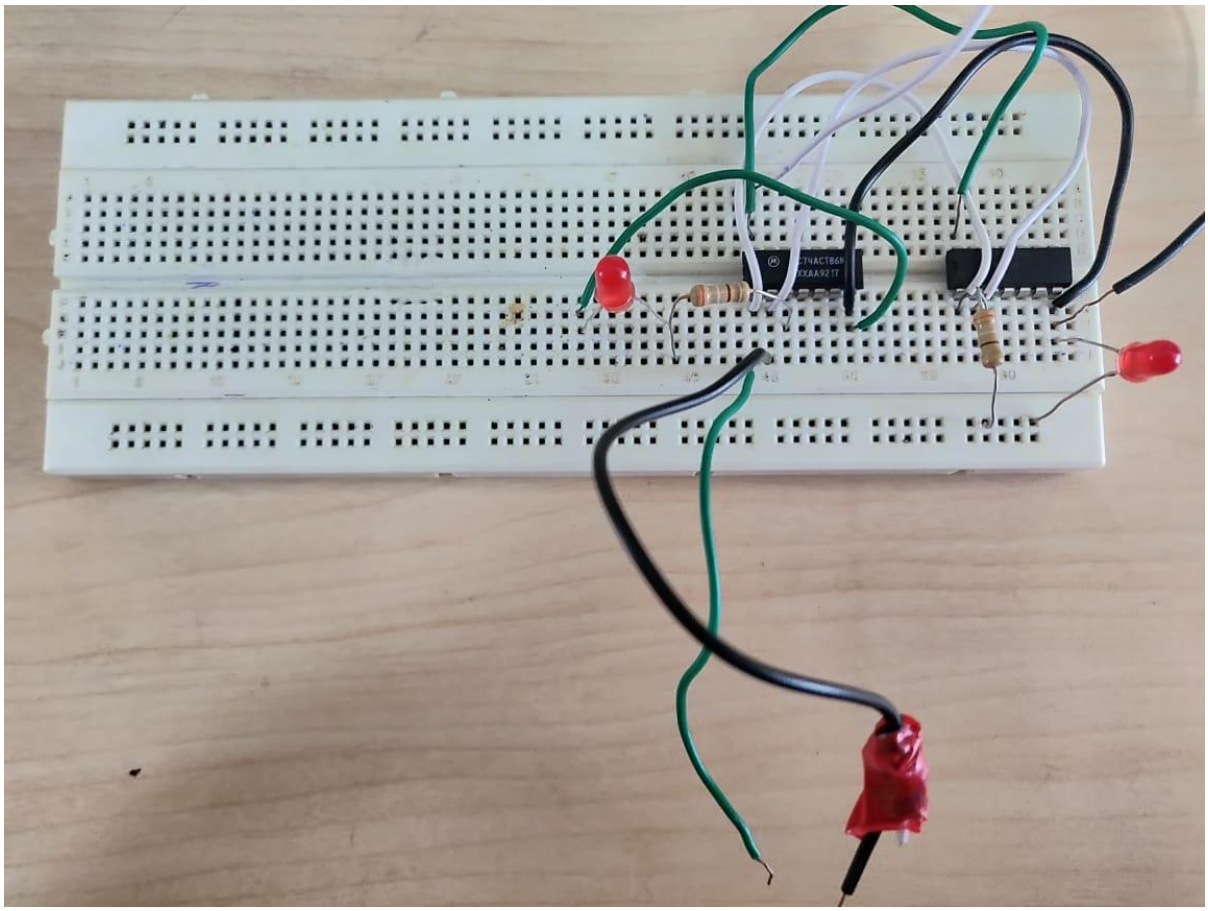
Circuit Diagram:



Theory:

Circuit needs 2 binary inputs & 2 binary outputs. The input variables designate the augend and addend bits; the output variables produce the sum & carry. The truth table is listed. Sum represents output of XOR gate and carry represents output of AND gate.

PRACTICAL CIRCUIT: -



Truth Table

A	B	S=A⊕B	C=A.B
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

$S = A \oplus B$

$C = AB$

Observation:

It is observed that on giving the inputs the LEDs glow in accordance with the truth table thus verifying the implemented circuit.

Procedure:

1) Connect the XOR & AND gates along with the LEDs, source & wires to the breadboard according to the given circuit. switch on voltage source.
2) Give the inputs according to truth table by connecting wires to ground (7) for 0 & to (14) for 1 input.
3) Record your observations

Result:

Truth table is verified using logic gates for half-adder.

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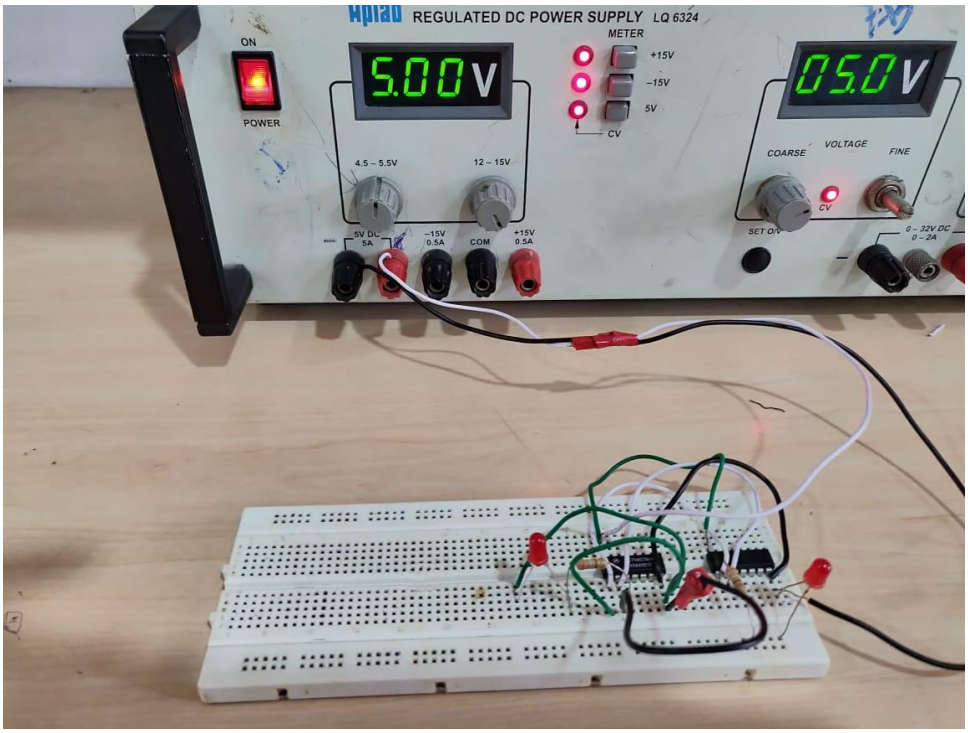
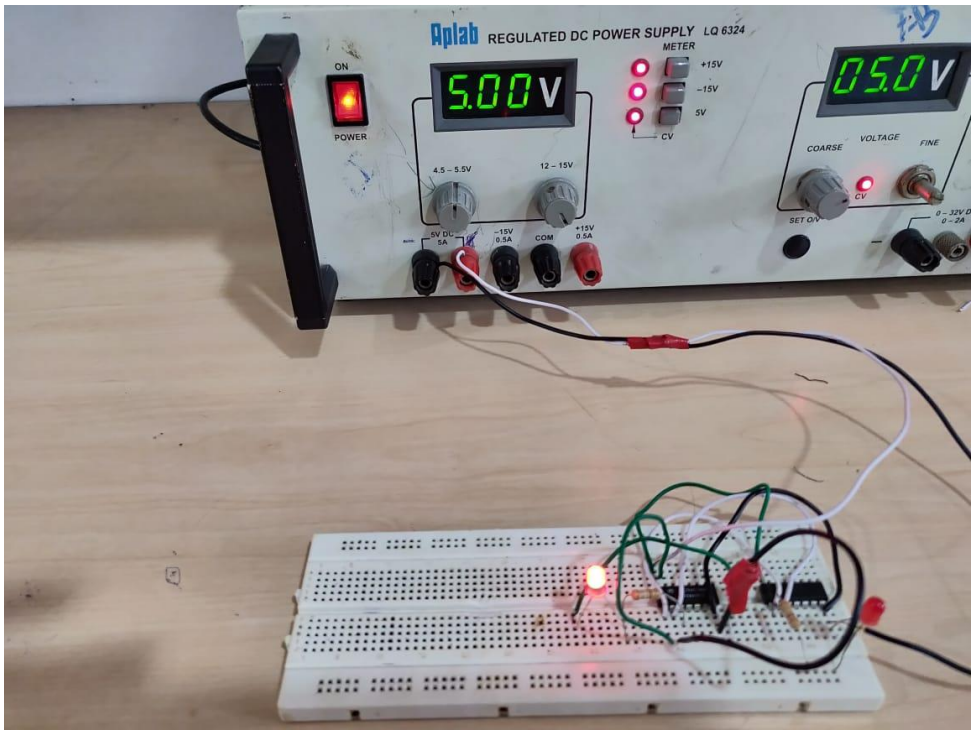
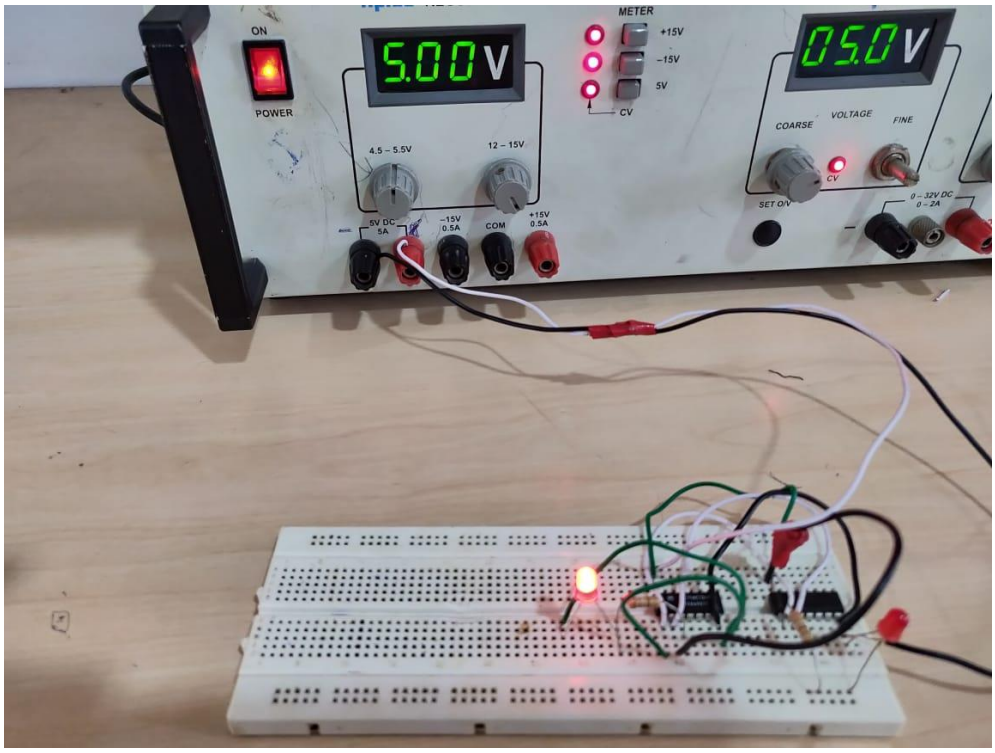
A	B	S	C
0	0	0	0



A	B	S	C
0	1	1	0



A	B	S	C
1	0	1	0



A	B	S	C
1	1	0	1