Name :- AMIT RAWAT

Roll No :- 42
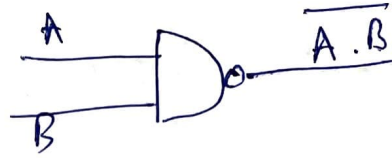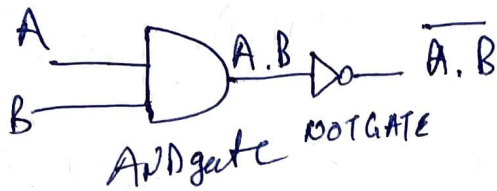
Student Id :- 21711018

MID ~~END~~ TERM PRACTICAL

CO & CA

A NAND gate is a logic gate that produces a low output (0) only if all its inputs are true, and high output (1) otherwise. Hence the NAND gate is the inverse of an AND gate, and its circuit is produced by connecting an AND gate to a NOT gate. Just like an AND gate, a NAND gate may have any number of input probes but only one output probe.

The NAND gate performs the logical NAND operation. NAND gates are known as universal gates (along with NOR gates), which means they are a type of logic gate which can implement any boolean function without the need to use any other gate type.
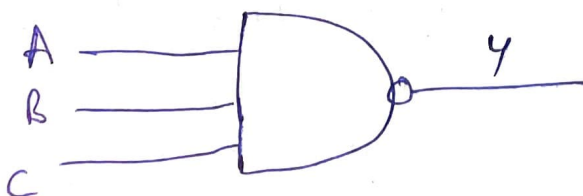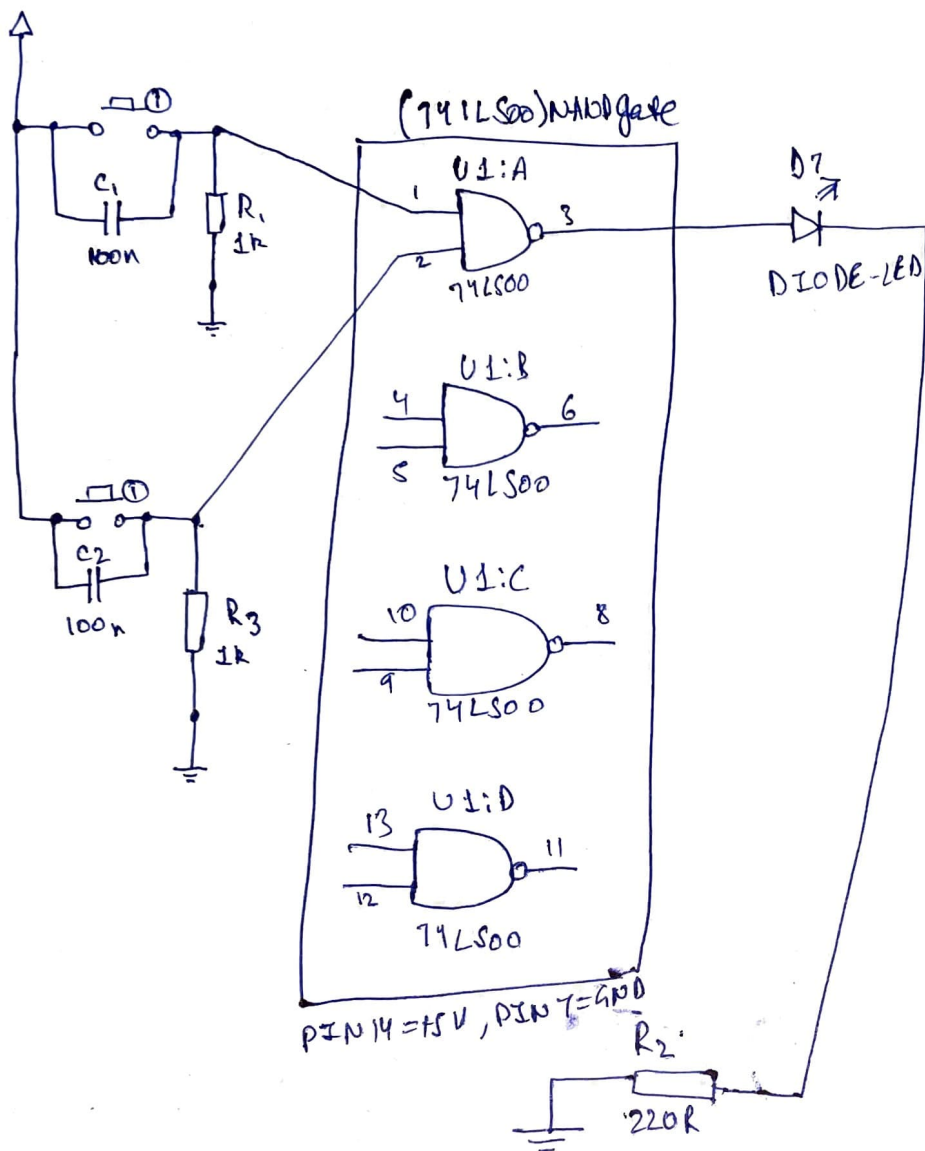
Basic logical construction of NAND gate :-

A ———┐
)—— A.B —▷o— $\overline{A.B}$
B ———┘
   AND gate   NOT GATE

A ———┐
)o—— $\overline{A.B}$
B ———┘

NAND gate truth table :-

Inputs		Output
A	B	X = $\overline{A.B}$
0	0	1
0	1	1
1	0	1
1	1	0

3 input NAND gate

A ———┐
B ———┤)o—— Y
C ———┘

(74LS00) NAND gate

U1:A
1
3
2
74LS00

D1
DIODE-LED

C_1
100n

R_1
1R

U1:B
4
6
5
74LS00

U1:C
10
8
9
74LS00

C_2
100n

R_3
1k

U1:D
13
11
12
74LS00

PIN 14 = 15 V, PIN 7 = GND

R_2
220R

Circuit Diagram of NAND gate