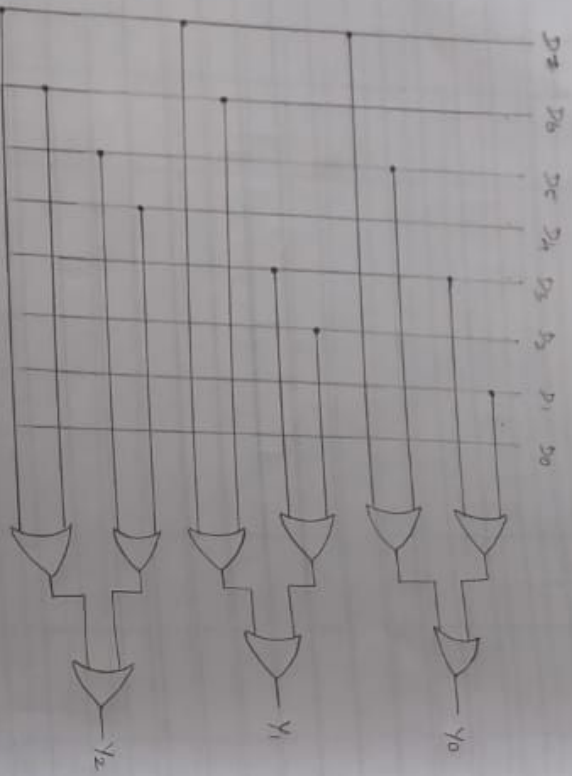


# Logic Diagram



Truth Table

I/P				O/P			
D <sub>3</sub>	D <sub>2</sub>	D <sub>1</sub>	D <sub>0</sub>	Y <sub>3</sub>	Y <sub>2</sub>	Y <sub>1</sub>	Y <sub>0</sub>
0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	1
0	0	1	0	0	1	0	0
0	0	1	1	0	1	0	1
0	1	0	0	1	0	0	0
0	1	0	1	1	0	0	1
0	1	1	0	1	1	0	0
0	1	1	1	1	1	0	1
1	0	0	0	0	0	1	0
1	0	0	1	0	0	1	1
1	0	1	0	0	1	1	0
1	0	1	1	0	1	1	1
1	1	0	0	1	0	1	0
1	1	0	1	1	0	1	1
1	1	1	0	1	1	1	0
1	1	1	1	1	1	1	1

## Ex No:1      CONVERT NUMBER SYSTEM TO MONITOR

Aim:  
To convert number system to another binary, decimal, octal, hexa decimal.

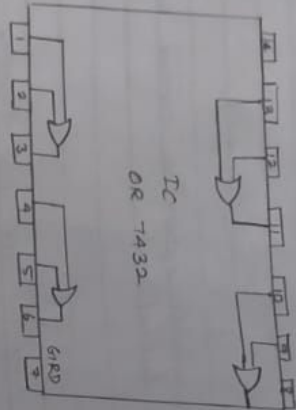
### Apparatus Required:

S.No	Name	Range	Type	Quantity
1.	Excess gate	IC1486	-	1
2.	connecting wire	-	-	500
3.	Digital IC trainer kit	-	-	1

### Procedure:

- Converting are given as per the circuit diagram
- Output are given as per circuit diagram
- Observe the output
- Note down the corresponding output values

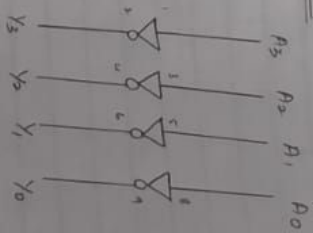
PIN DIAGRAM :-



## RESULT :-

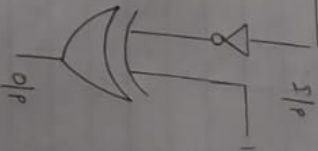
thus the number system conversion strong, decimal, hexadecimal are verified.

### 1's COMPLEMENT :



1	1	0	1
0	0	1	0
0	0	1	1

### 2's COMPLEMENT :



1	1	1	0
0	0	0	1
0	0	1	0

1's COMPLEMENT → 1  
2's COMPLEMENT → 1  
Sum = 0

### EXNO:2

CALCULATE 1's and 2's COMPLEMENTS

#### Aim

TO calculate 1's and 2's complement by using logic gates and verify its truth table.

#### APPARATUS REQUIRED :

S.NO	NAME	RANGE	TYPE	QUANTITY
1.	AND gate	TC 2408	-	1
2.	NOT gate	TC 7404	-	1
3.	EXOR gate	IC 7486	-	1
4.	Digital IC trainer kit	-	-	1

#### PROCEDURE

- connecting given as per the circuit diagram
- Input are given as per circuit diagram
- observe the output result
- Note down the corresponding output value.

RESULT:

Thus the above is complement and its complement are verified.

EX NO: 3

IMPLEMENT THE BASIC LOGIC GATES

Aim

TO verify the truth table of AND OR and NOT using IC's

APPARATUS REQUIRED :-

S.NO	NAME	BRAND	TYPE	QUANTITY
1.	OR gate	IC 7432	-	1
2.	AND gate	IC 7408	-	1
3.	NOT gate	IC 7400	-	1
4.	connecting wire	-	-	400
5.	digital IC trainer kit	-	-	1

PROCEDURE

1) make the connection as per logic diagram by using IC trainer board

2) switch ON the IC trainer board

3) Apply different combination of input as per the truth table

4) Note the corresponding output level

5) Repeat the above procedure for all other IC's

6) switch off the IC's trainer board

7) disconnect the components.



RESULT

True the above value of the given leafy green are verified.

EX. NO. 1A

IMPLEMENT THE NAND GATES AS A  
UNIVERSAL BUILDING BLOCK.

AIM

TO realization of basic gate using NAND gate

APPARATUS REQUIRED :

S.NO	NAME	RANGE	QUANTITY
1.	NAND	TC 1400	1
2.	IC trainer	Digital	1
3.	connecting key	-	Four

PROCEDURE :

i) circuit connection are made as per the  
circuit diagram for each gate.

ii) By giving proper input the corresponding  
output are verified as per the truth table.

RESULT  
Thus the above basic gates are realized by  
using NAND.



EX: NO: 5

IMPLEMENT THE NOR GATE AS A  
UNIVERSAL BUILDING BLOCK

AIM:

TO realization of basic gates using nor gate.

APPARATUS REQUIRED:

S.NO	NAMES	RANGE	QUANTITY
1.	NOR	TC 1402	1
2.	IC trainer	Digital	1
3.	connecting key	-	(var)

PROCEDURE

i) circuit connection are made as per the circuit diagram for each gate.

ii) By giving proper input the corresponding output verified as per the truth table.

Result  
Thus the half gate are verified by using  
one gate.

EX. NO. 16

SIMPLEY & DESIGN BOOLEAN EXPRESSION  
USING BASIC LOGIC GATES

Aim :

TO simplify & design Boolean expression using  
Basic logic gates.

APPARATUS REQUIRED :

S.NO	NAME	RANGE	QUANTITY
1.	Digital IC Trainer	-	1
2.	AND gate	IC 7408	1
3.	OR gate	IC 7432	1
4.	NO gate	IC 7404	1
5.	connecting wires	-	Feas

PROCEDURE

i) circuit connection are made as per the circuit  
for each gate

ii) By giving proper input the corresponding  
output verified as per the truth table.



RESULT :

Thus the boolean expression using basic logic gates was designed successfully.

Ex. No: 1

SIMPLEY & DESIGN BOOLEY EXPRESS WITH  
UNIVERSAL GATE

Aim:

To simplify & design boolean express using universal gate

APPARATUS REQUIRED:

S.NO	NAME	RANGE	QUANTITY
1.	Digital IC	-	1
	Trainer kit		
2.	NAND gate	TC-1402	1
3.	NOR gate	TC-1402	1
4.	connecting wire	-	few

PROCEDURE

i) connections are given as per the circuit diagram

ii) Input are given as per circuit diagram

iii) observe the output result.

iv) Note down the corresponding output value



### Result

Thus the kernel process using setuid  
gate was verified successfully.

EX.NO: 2

# DESIGN AND IMPLEMENT HALF ADDER AND FULL ADDER CIRCUIT

AIM:

TO DESIGN AND IMPLEMENT half adder and full adder circuit.

APPARATUS REQUIRED:

S.NO	DESCRIPTION	RANGE	QUANTITY
1.	IC Trainer kit	Digital	1
2.	Yes	7402, 7404 7432, 7404	each 100
3.	Connecting wire	-	-

PROCEDURE

1) make the connections as per the logic diagram

2) Apply the input combination one by one as specified in the truth table.

3) switch on the digital IC trainer board.

4) note the corresponding output level

5) Repeat the above procedure for all input combination

6) switch off the digital IC trainer board

vii) Disconnect the components.

RESULT :

Thus the half adder and full adder circuit is constructed and its truth table is verified.

EX. NO: 4

DESIGN AND IMPLEMENT HALF SUBTRACTOR AND  
FULL SUBTRACTOR CIRCUIT

Aim:

To construct and verify half subtractor and full subtractor circuit using logic gates.

APPARATUS REQUIRED:

S.NO	Name	Range	Type	Quantity
1.	IC-7408	-	-	1
2.	IC-7486	-	-	1
3.	IC-7404	-	-	1
4.	IC-7432	-	-	1
5.	IC Trainer kit	-	-	1
6.	connecting wire	-	-	few

PROCEDURE:

- The circuit connection are made as per the circuit diagram for full subtractor.
- By giving proper input the corresponding output are verified as per the truth table.

Result:

Thus the half submatrix and full submatrix circuit is constructed and its truth table is verified.



2. NO. 11

REDUCE MULTIPLEXER AND DEMULTIPLEXER  
CIRCUIT

AIM :

To design and implement multiplex and demultiplex circuit TC 1004.

APPARATUS REQUIRED :

S.NO	COMPONENT	SPECIFICATION	Qty
1.	3T PNPV Gate IC 7411	-	2
2.	OR Gate	-	1
3.	NOR gate TC 1004	-	1
4.	TC Trainer kit	-	1
5.	connecting wire	-	Four

PROCEDURE :

i) connection are given as per circuit diagram

ii) logical input are given as per circuit diagram