

Maryam Iqbal
Physics

Class: 2nd Year Roll No: 530017
Test No: Assignment Date: 17-11-2014

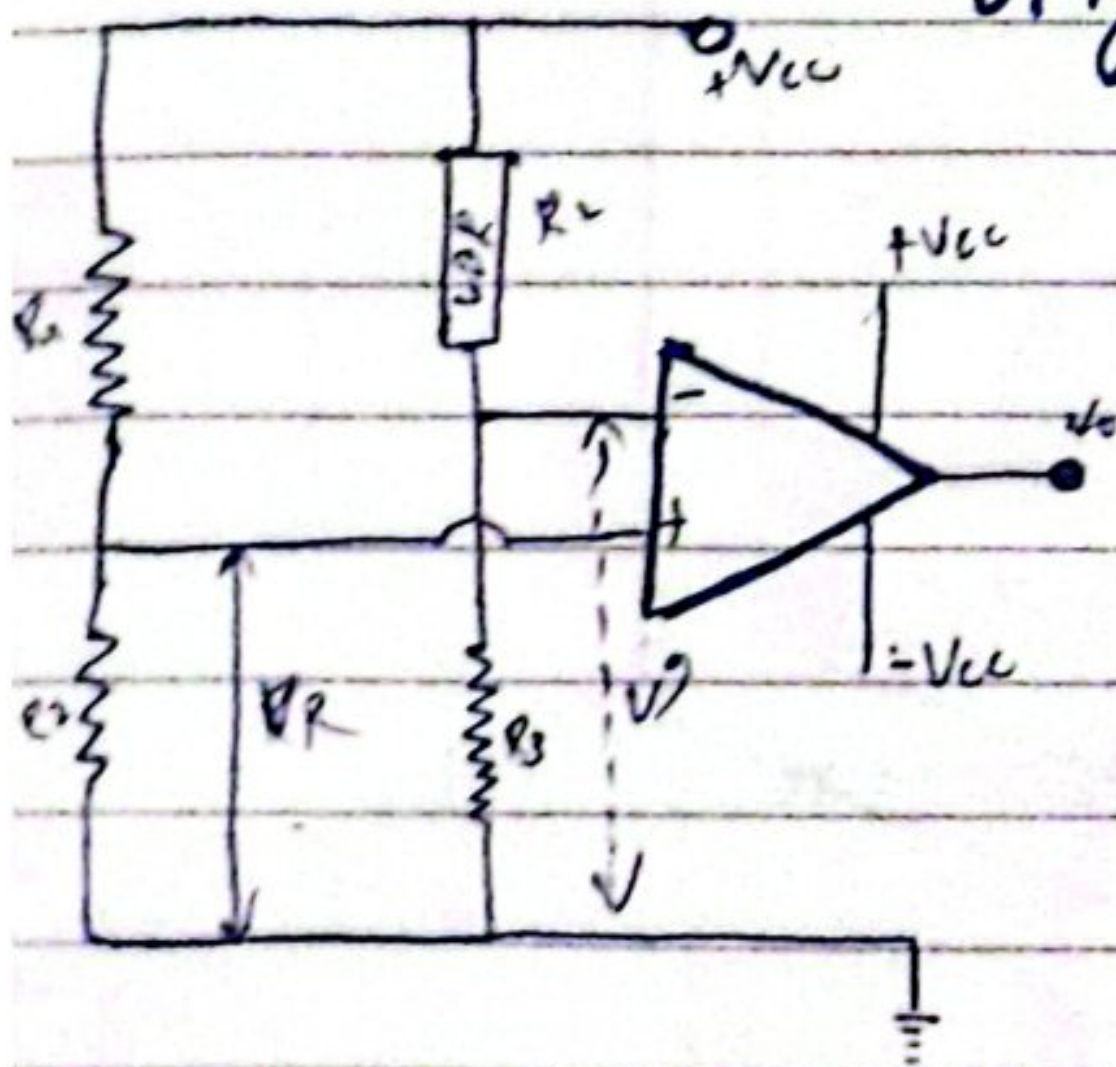
A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	Marks Obtained

Subjective Type

Question # 1 Short Questions

(ii)

Night Switch:-



Expressions:-

$V+$:- The output of op is connected with relay system shows $V_o = +V_{cc}$, then it turns the street light

$V-:-$

Thus when $V_o = -V_{cc}$ then the light will not be switched ON and remain off.

(iii)

NAND Gate used as NOT:-

A NAND gate can be used as NOT by connecting two inputs of the NAND gate together.



TRUTH TABLE:-

Input	Input	Output
0	0	1
1	1	0

Question:

Numerical:

Given Data:-

Collector current =

Current gain = β :

Base-Emitter $V = V_{BE} =$

Collector voltage = $V_{CC} =$

To find:-

$R_B = ?$

Calculations:-

Using the formula:-

$$\Rightarrow I_B = \frac{I_C}{\beta} \quad \text{putting values}$$

$$\Rightarrow I_B = \frac{10}{200} = \frac{1}{20} \text{ mA} = 0.05 \text{ mA}$$

Calculating the

$$V_{CC} = I_B R_B + V_{BE}$$

Putting values =

$$9 = 0.05 \times R_B + 0.6$$

$$0.05 \times R_B = 9 - 0.6$$

$$0.05 \times R_B = 8.4$$

$$R_B = \frac{8.4}{0.05 \times 10^{-3}} = 168000 \text{ VA}^{-1}$$

where $\text{VA}^{-1} = \Omega$

Hence

$$R_B = 168000 \Omega = 168 \times 10^3 \Omega$$

$$\boxed{R_B = 168 \text{ k}\Omega \text{ Ans}}$$



Question :-

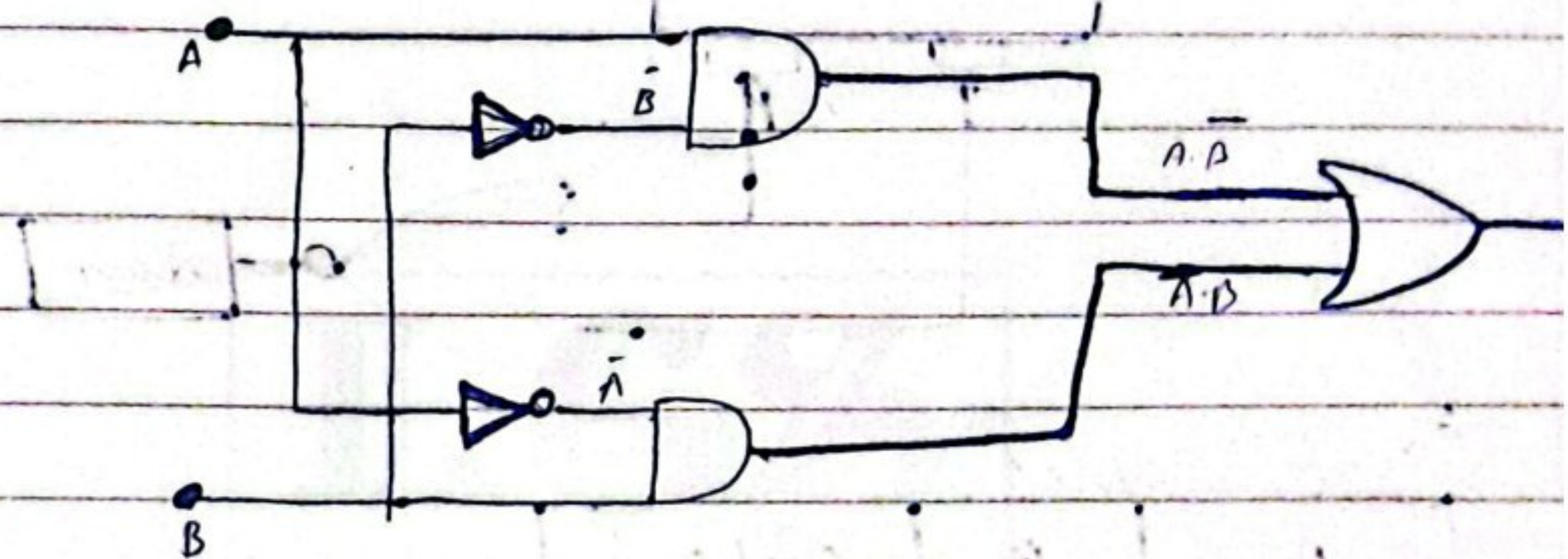
Boolean Expression:

As we know that the equation :-

$$X = A\bar{B} + \bar{A}B$$

hence -

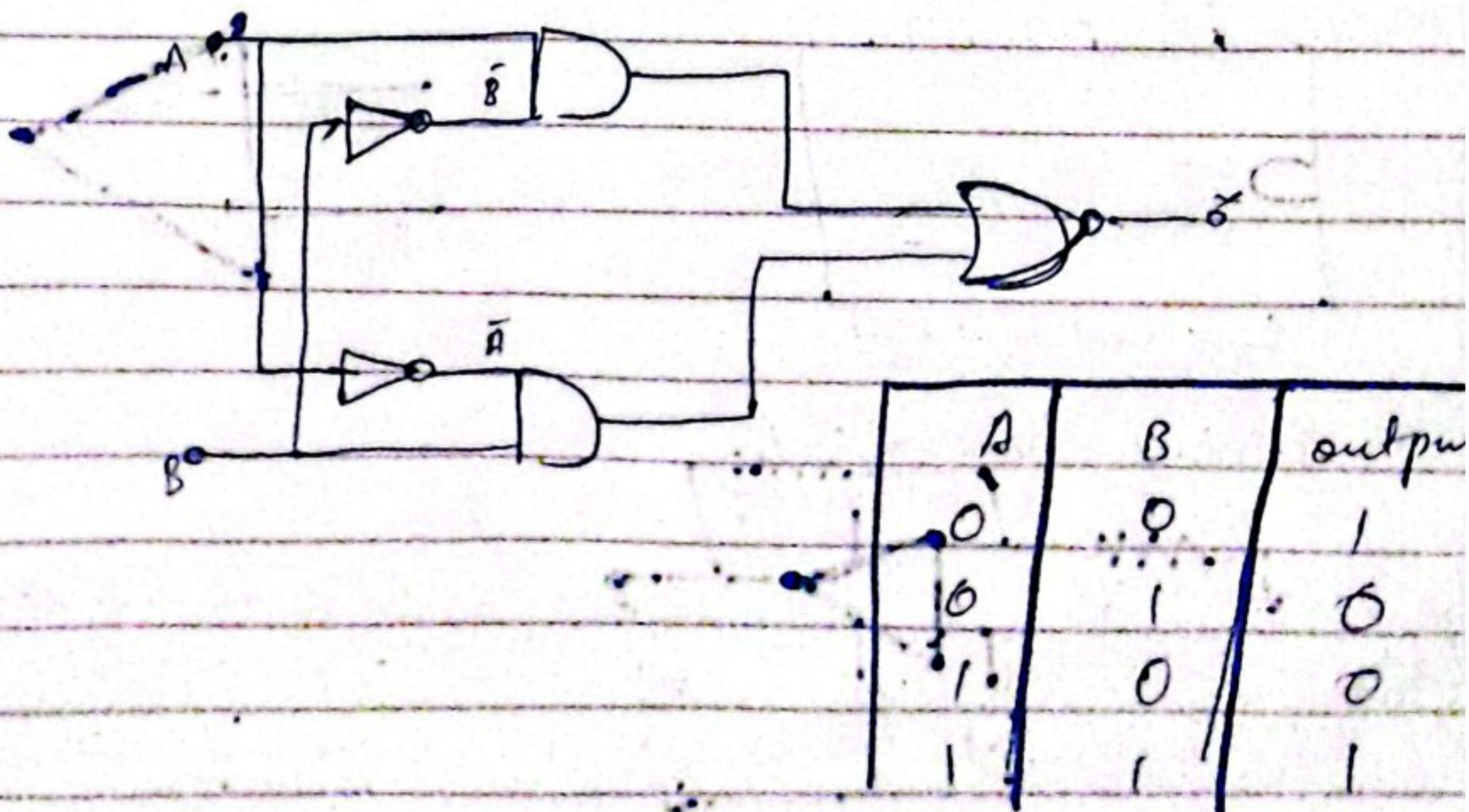
Representation:



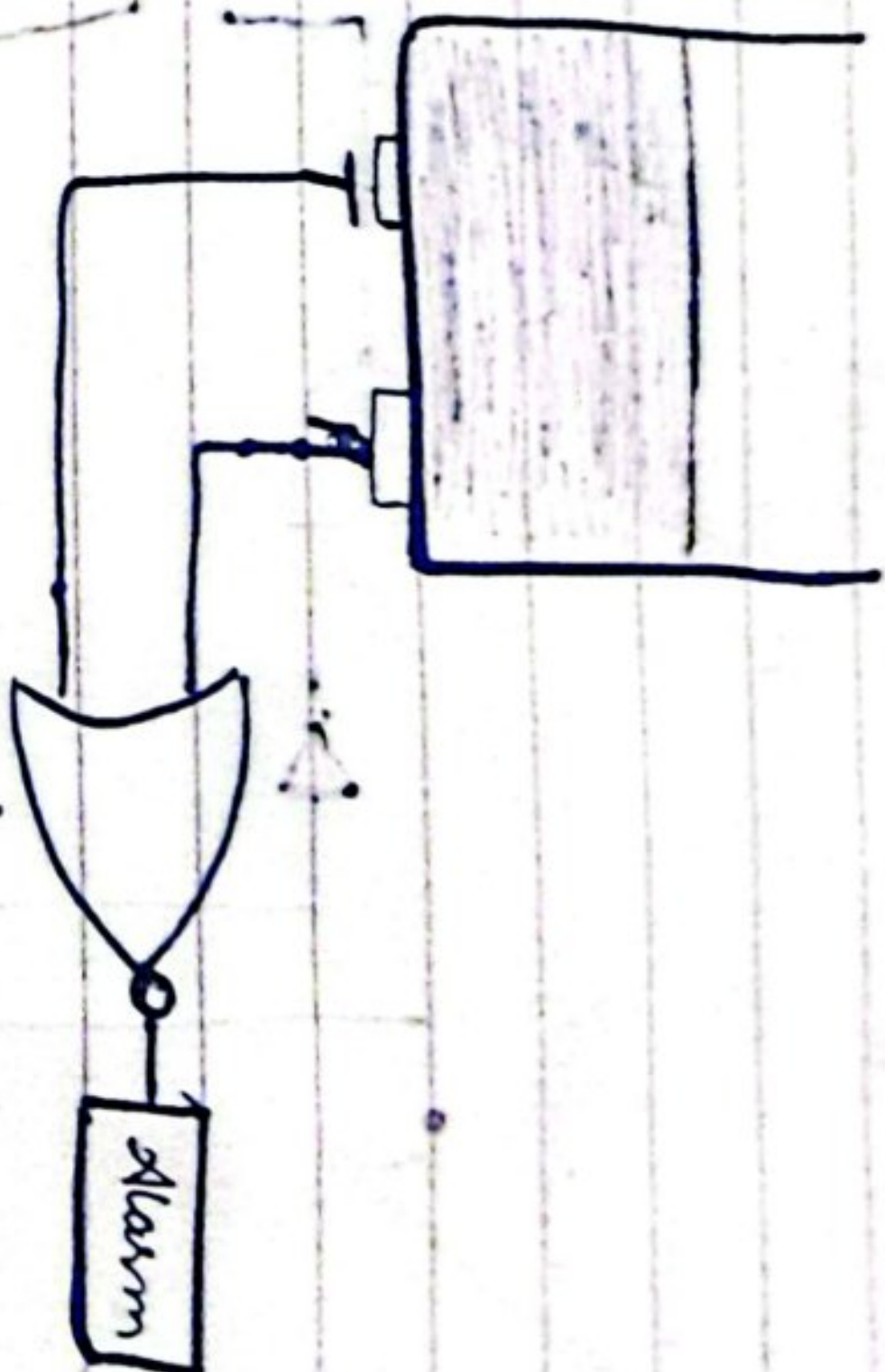
Truth Table :-

A	B	Output
0	0	1
0	1	1
1	0	1
1	1	0

Exclusive:



Control System:-



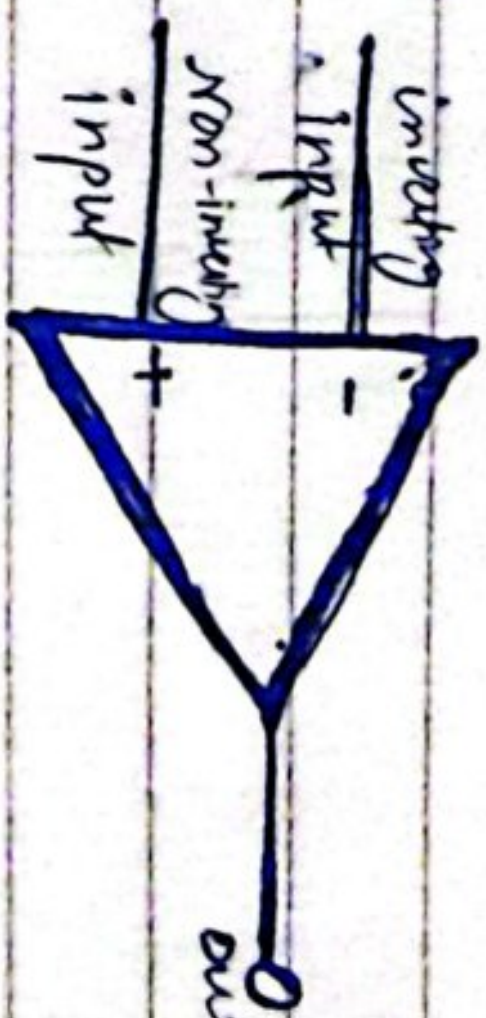
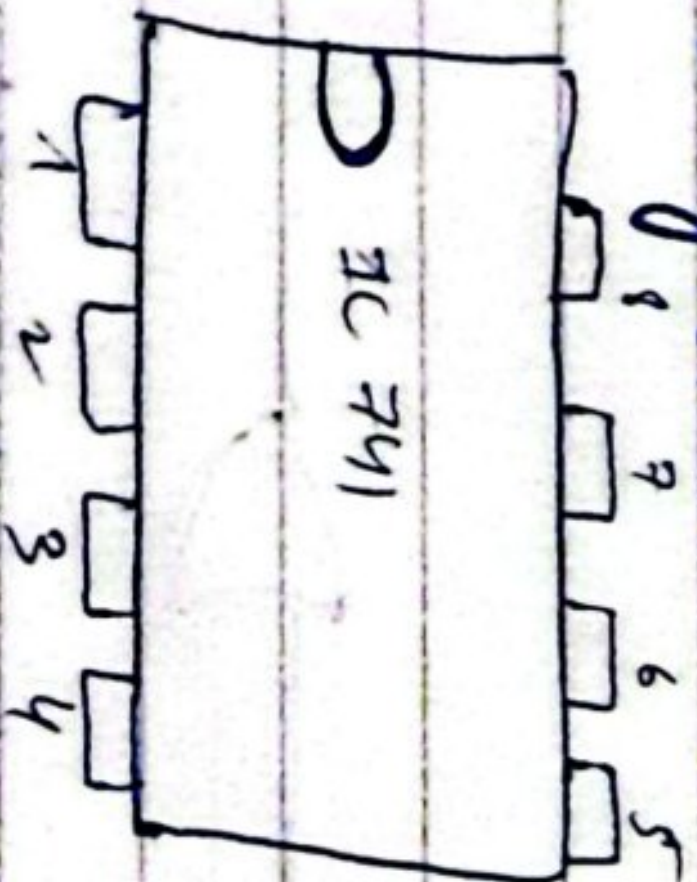
Truth Tables:-

A	B	Output
0	0	1
0	1	0
1	0	0
1	1	0

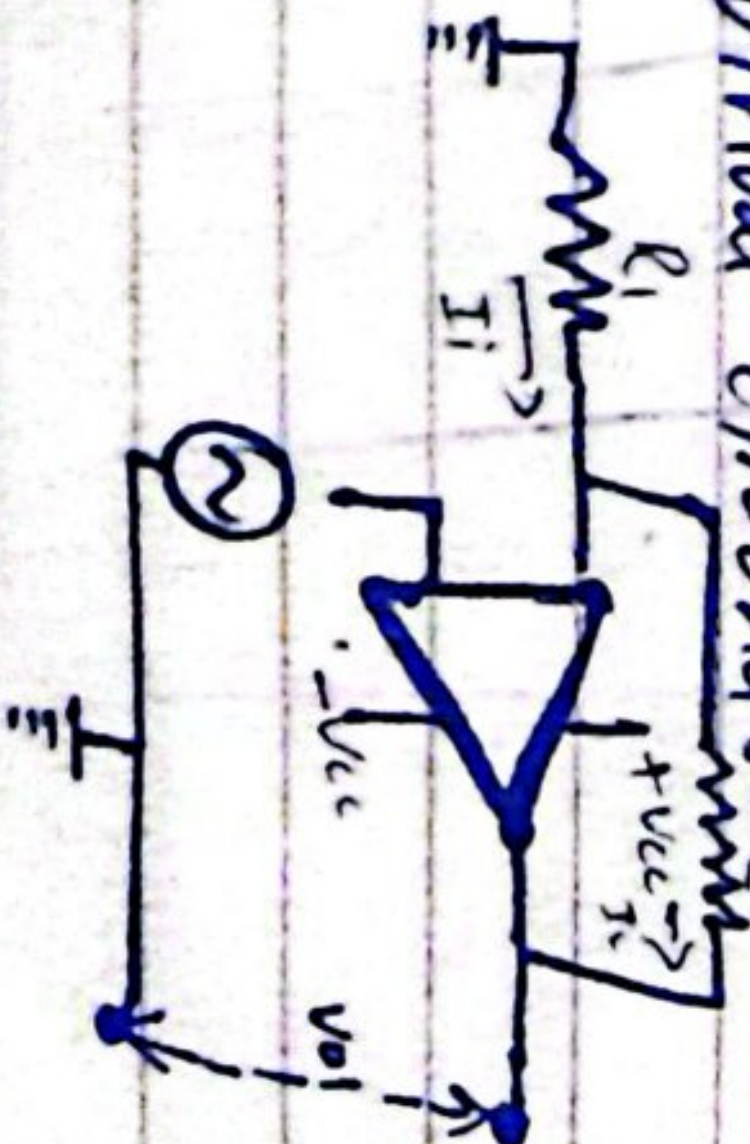
(i)

OP-Amp

Diagram 8-



Virtual Ground:-



This shows

$-V$ is at same approx at same potential