week-8,9

Cse260
Lab Assignment-8
(28th Dec at 5pm)

Name: Ms Rodxy Tahmid
sec: 09
ID: 20101021

Ans:

(1) **Name of the Experiment:**

Designing and implementing a circuit containing four 2 bit numbers A, B, C, D and two selection variables, S_1 and S_2.

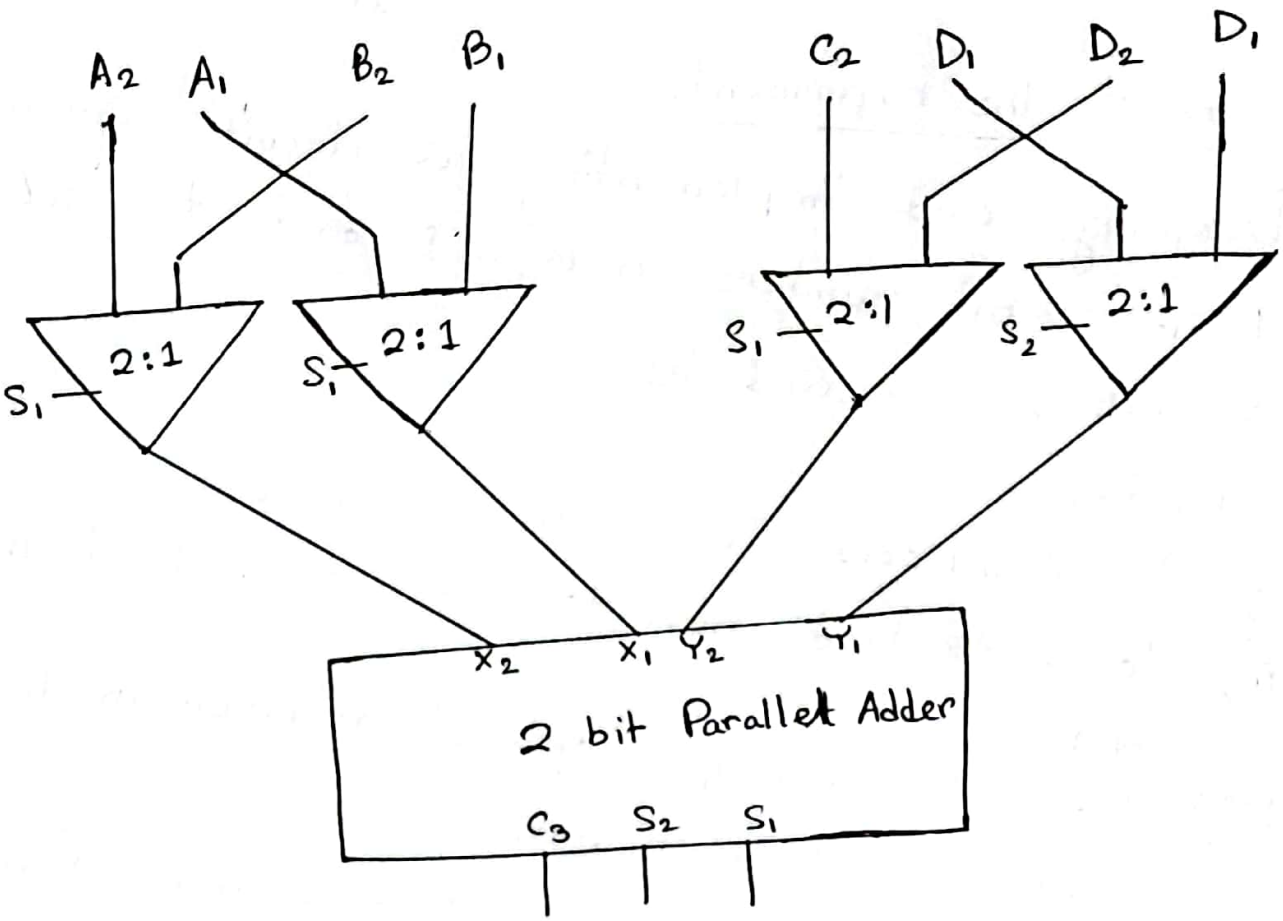
(2) **Objective:**

i) To familiarize us with the mux.
ii) To understand how to use mux to transfer data.
iii) To add multiple optional number in the same circuit with mux.
iv) To learn how to make 2:1 mux from 4:1 mux.

(3) **Required Components and Equipments**

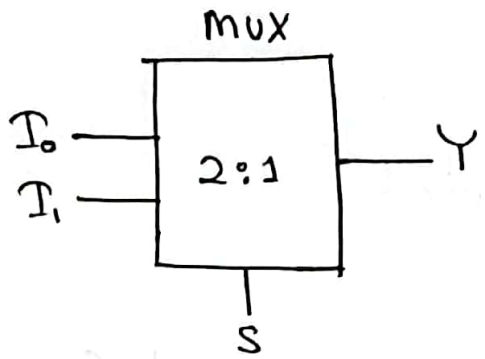
↳ IC: 74153 [MUX] → 4:1.
↳ IC: 7483 [2 bit Parallel Adder]
↳ Inputs (using logicstate)
↳ LEDs (Blue or any other color)
↳ Power Source / Ground
↳ Logic Probes (S1, S2).

④ Experimental Setup (i.e diagram of the circuit):



Block Diagram

(5) Results and Discussions



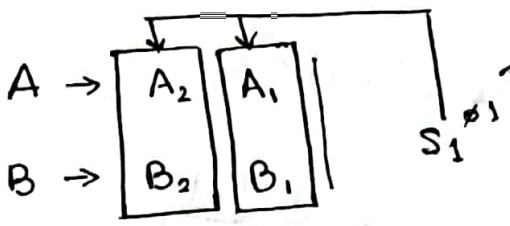
S	Y
0	I_0
1	I_1

$n = 2^{(m) \to S}$

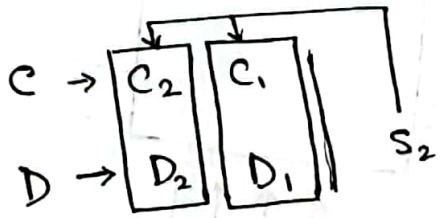
$2 \to 1$
$4 \to 2$
$8 \to 3$

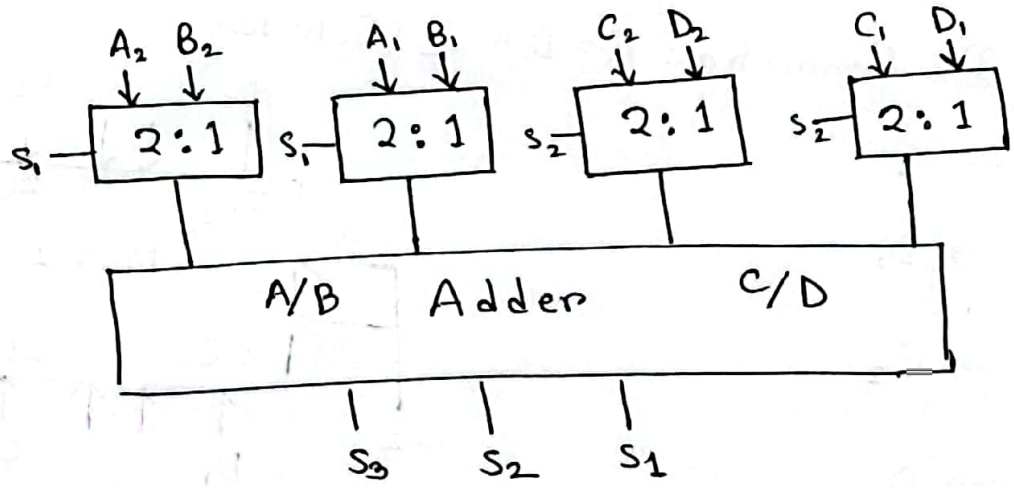
2-bit

A_2A_1 , B_2B_1 , C_2C_1 , D_2D_1



2:1





Set: $C_4 = C_{out}$, $C_0 = 0$

Strobe = Low

Mux Connection:

Making 4:2 Mux to 2:1 Mux:

Short Selector A and B

Selector	Data Input (Active)	Output (1Y)	Output (2Y)
00	$1C_0$, $2C_0$	$1C_0$	$2C_0$
11	$1C_3$, $2C_3$	$1C_3$	$2C_3$

We'll give Inputs:

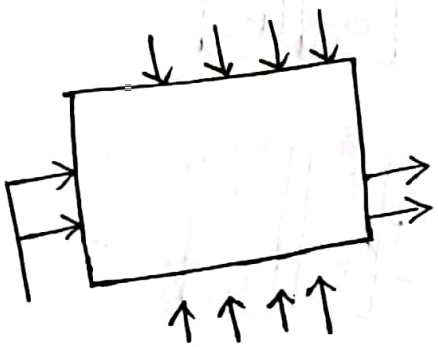
First IC Connection: $A = B = S_1$ (Selector)

$1C_0 \rightarrow A_1$

$1C_3 \rightarrow B_1$

$2C_0 \rightarrow A_2$

$2C_3 \rightarrow B_2$



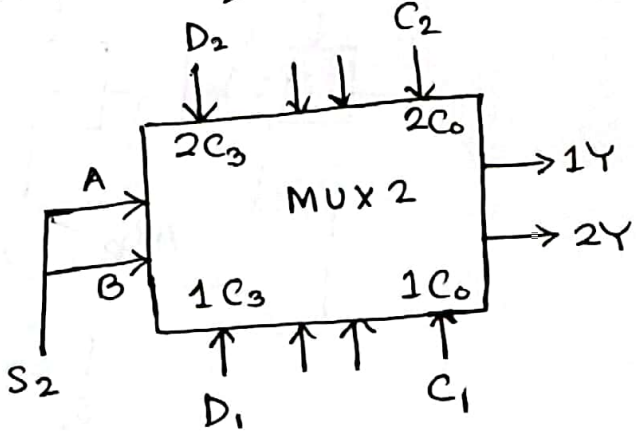
Second IC Connection: $C = D = S_2$ (Selector)

$1C_0 \rightarrow C_1$

$1C_3 \rightarrow D_1$

$1C_0 \rightarrow C_2$

$2C_3 \rightarrow D_2$



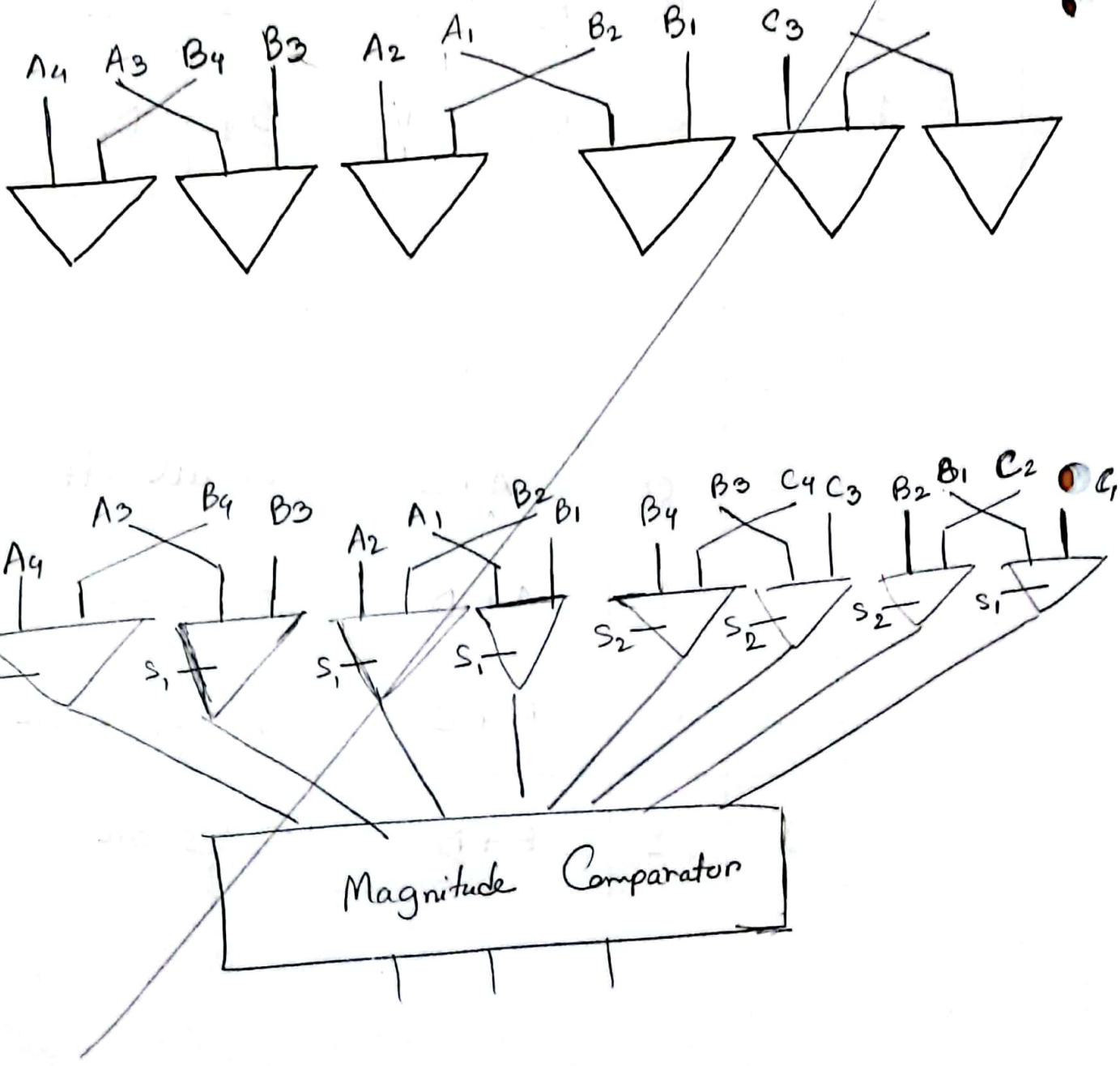
Selector : S1 (First MUX)	Output of Mux-1		Selector: S2 (Second MUX)	Output of MUX-2	
	1Y	2Y		1Y	2Y
0	A_1	A_2	0	C_1	C_2
0	A_1	A_2	1	D_1	D_2
1	B_1	B_2	0	C_1	C_2
1	B_1	B_2	1	D_1	D_2

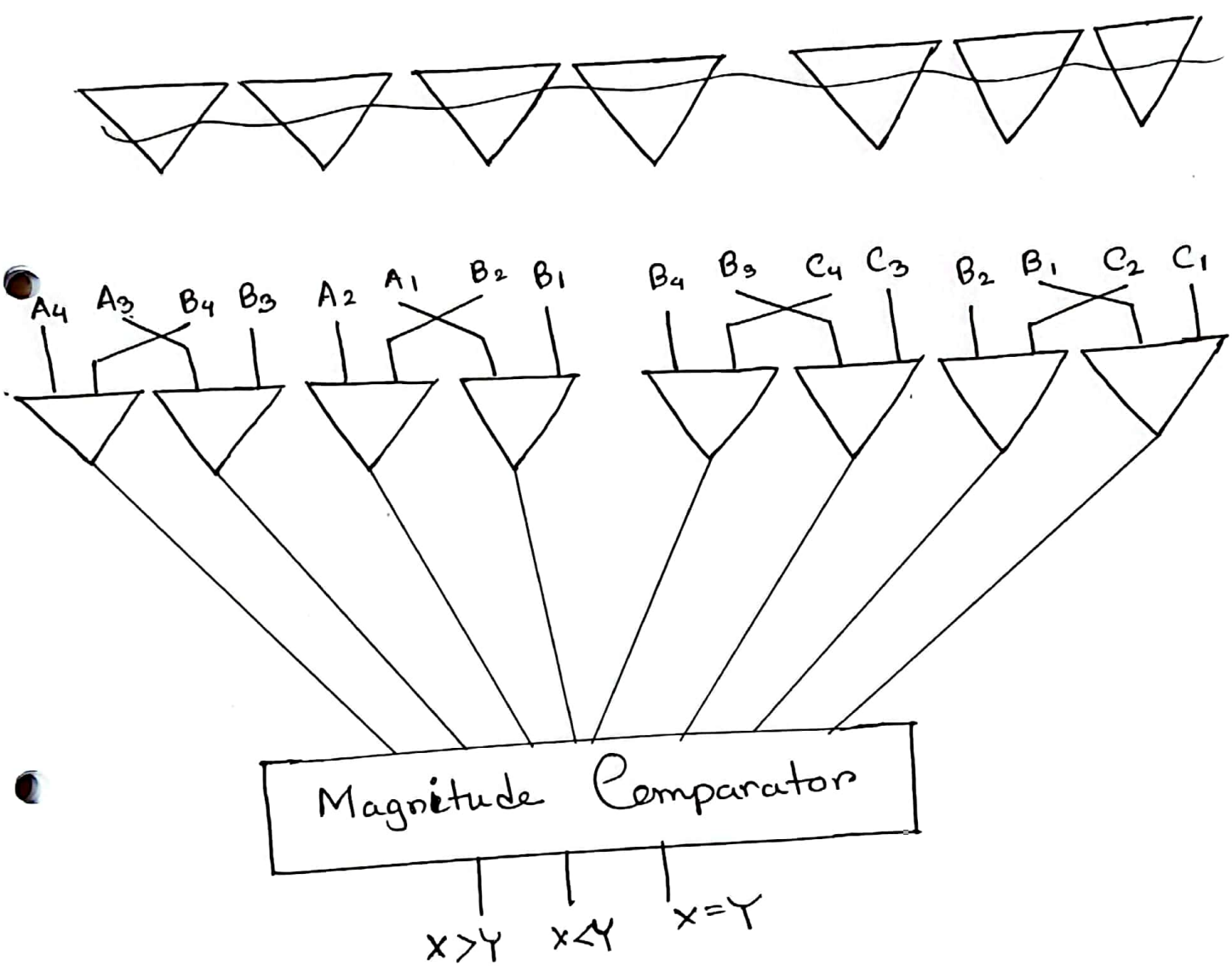
S1	S2	Operation	LED outputs
0	0	A + C	⇒ all off
0	1	A + D	⇒ S1 on D5 on
1	0	B + C	⇒ S1, S2 on D4, D5 on
1	1	B + D	⇒ S3 on D3 on

* Draw a circuit diagram which will compare three 4 bit numbers. You have Magnitude Comparators and 2:1 MUXs.

~~$A_1 A_2 A_3 A_4$~~ ~~$B_1 B_2 B_3 B_4$~~ ~~$C_1 C_2 C_3 C_4$~~.

$A_4 A_3 A_2 A_1$ $B_4 B_3 B_2 B_1$ $C_4 C_3 C_2 C_1$





Block Diagram

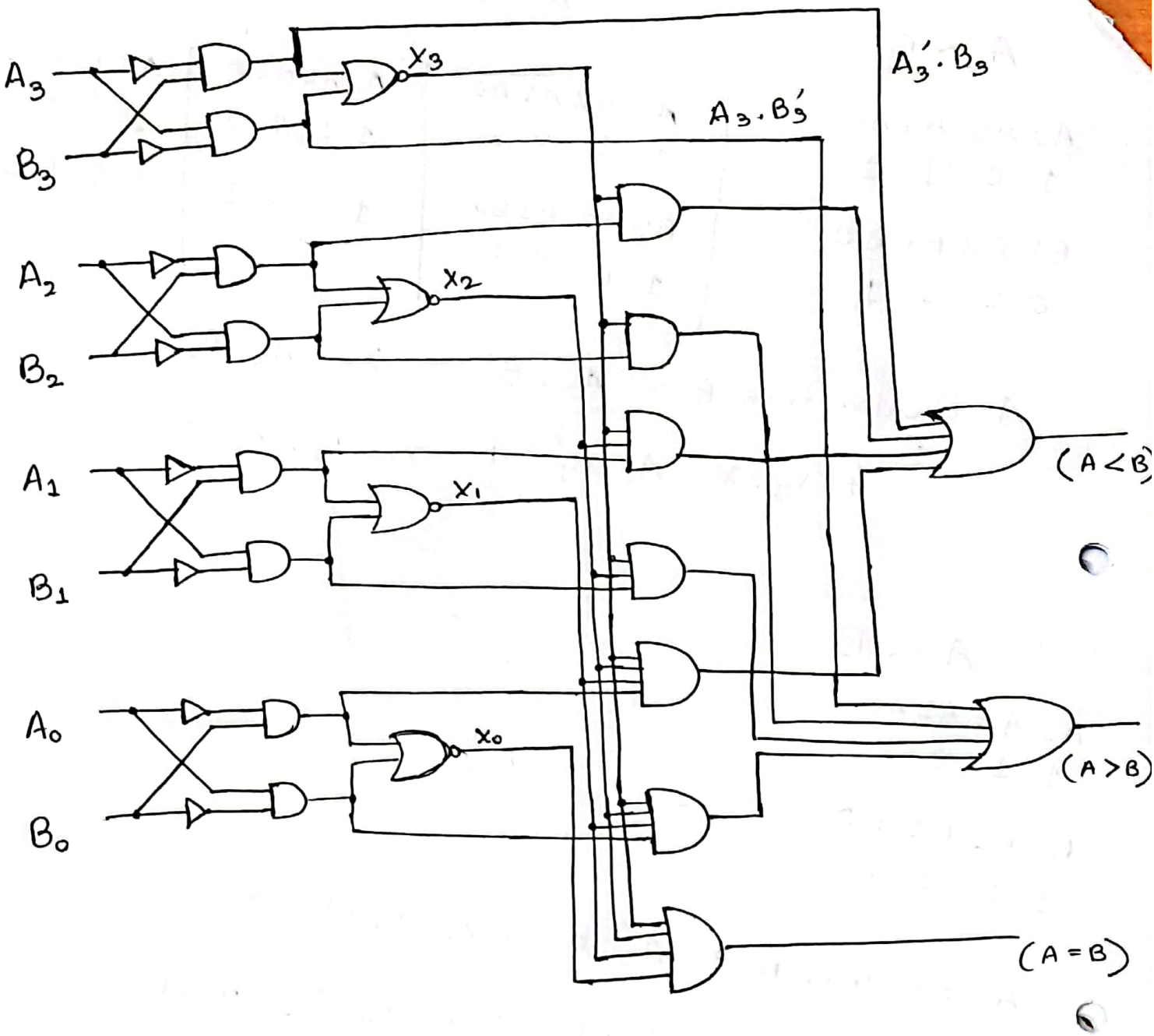


Figure no: Magnitude Comparator