Manuel
Alvarez

Midterm 2 — 5-1-20

Ch. 5 -

(M) — (M)

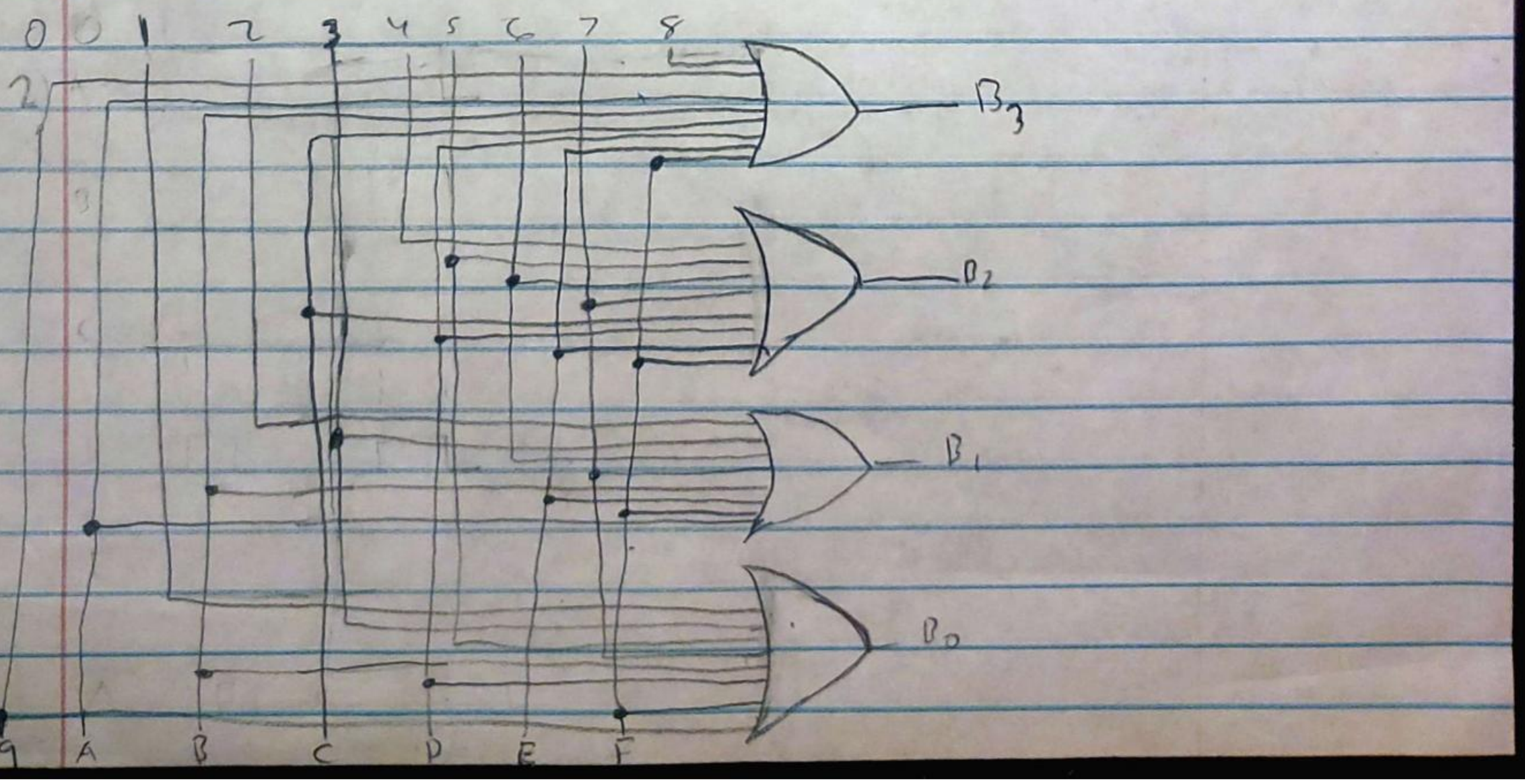
| | Decimal | Binary |
|---|---|---|
| 0 | 0 | 0000 |
| 1 | 1 | 0001 |
| 2 | 2 | 0010 |
| 3 | 3 | 0011 |
| 4 | 4 | 0100 |
| 5 | 5 | 0101 |
| 6 | 6 | 0110 |
| 7 | 7 | 0111 |
| 8 | 8 | 1000 |
| 9 | 9 | 1001 |
| A | (10) A | 1010 |
| B | (11) B | 1011 |
| C | (12) C | 1100 |
| D | (13) D | 1101 |
| E | (14) E | 1110 |
| F | (15) F | 1111 |

Encoder: digits 0–9 and letters A–F to binary

$B_0$, $B_1$, $B_2$, $B_3$

base = 16

0 to F



2) A -

B -

C -

D -

E -

V -

$\overline{E}$ -

(A B) G1 -

(G1 C) G2 -

(D E) G3 -

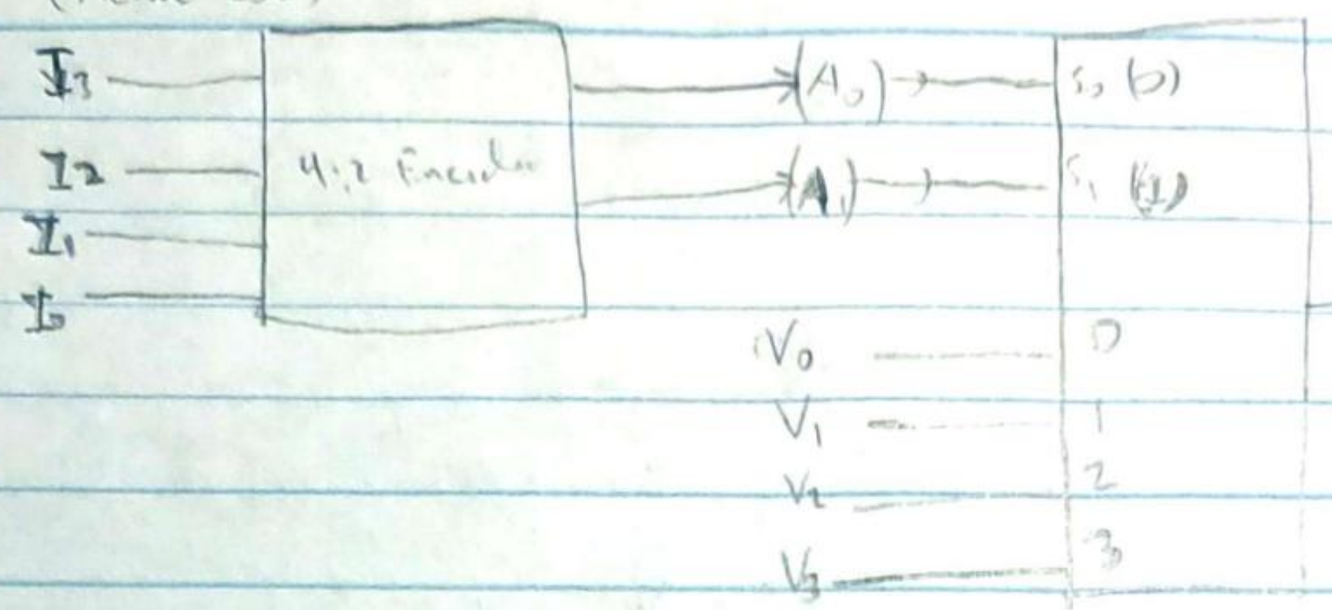
(G3 + G2) G4 -

X -

The faulty gate in this circuit is either $G_1$ or $G_2$. Output open.

# Ch. 6 (Review)

3) a) (Active-Low)

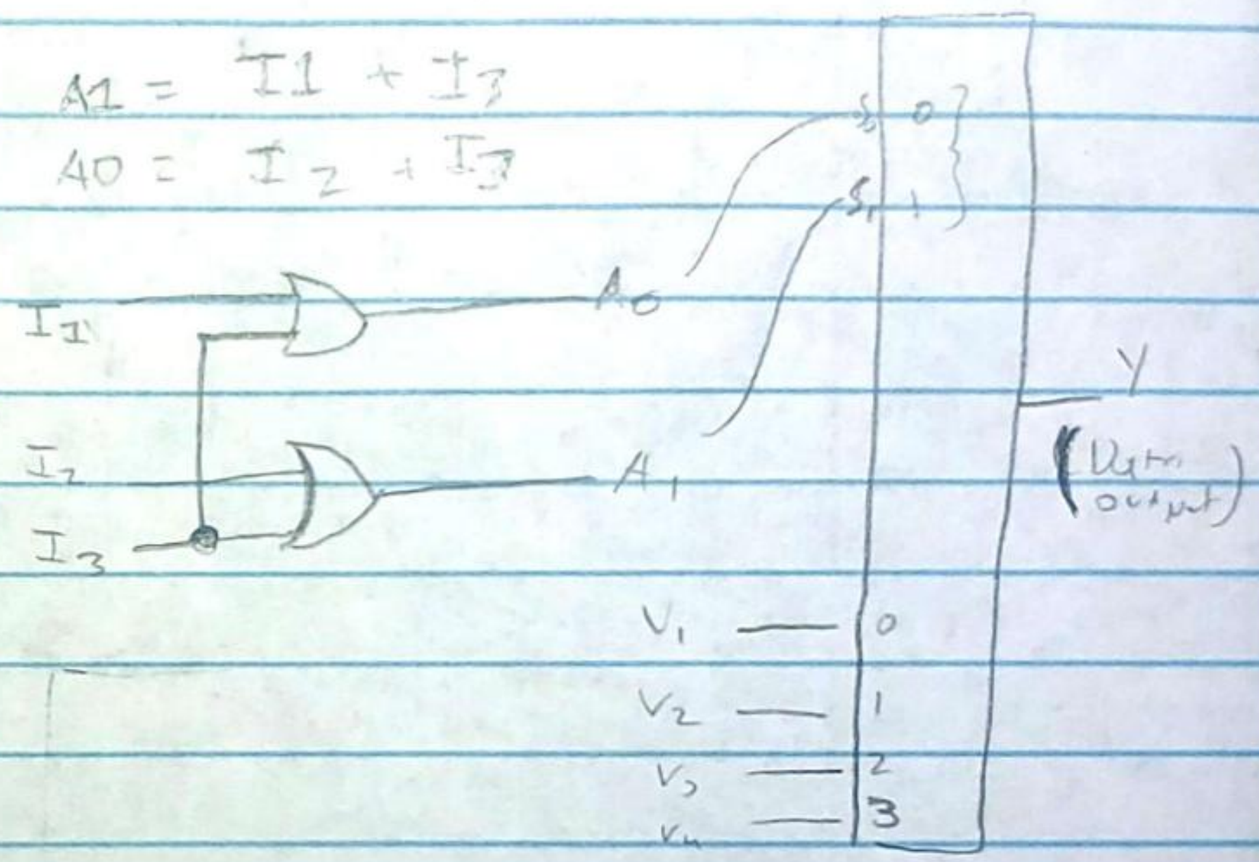



Encoder Logic

| Inputs | | | | Outputs | |
|---|---|---|---|---|---|
| $I_3$ | $I_2$ | $I_1$ | $I_0$ | A1 | A0 |
| 0 | 0 | 0 | 1 | 0 | 0 |
| 0 | 0 | 1 | 0 | 0 | 1 |
| 0 | 1 | 0 | 0 | 1 | 0 |
| 1 | 0 | 0 | 0 | 1 | 1 |

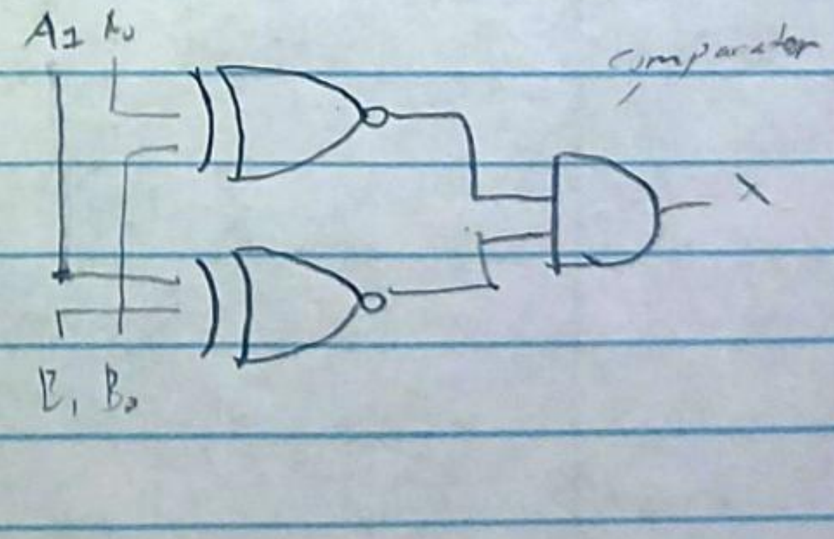
$A1 = I1 + I_3$

$A0 = I_2 + I_3$




b) XNOR gate logic

| A | B | X |
|---|---|---|
| 0 | 0 | 1 |
| 1 | 0 | 0 |
| 0 | 1 | 0 |
| 1 | 1 | 1 |

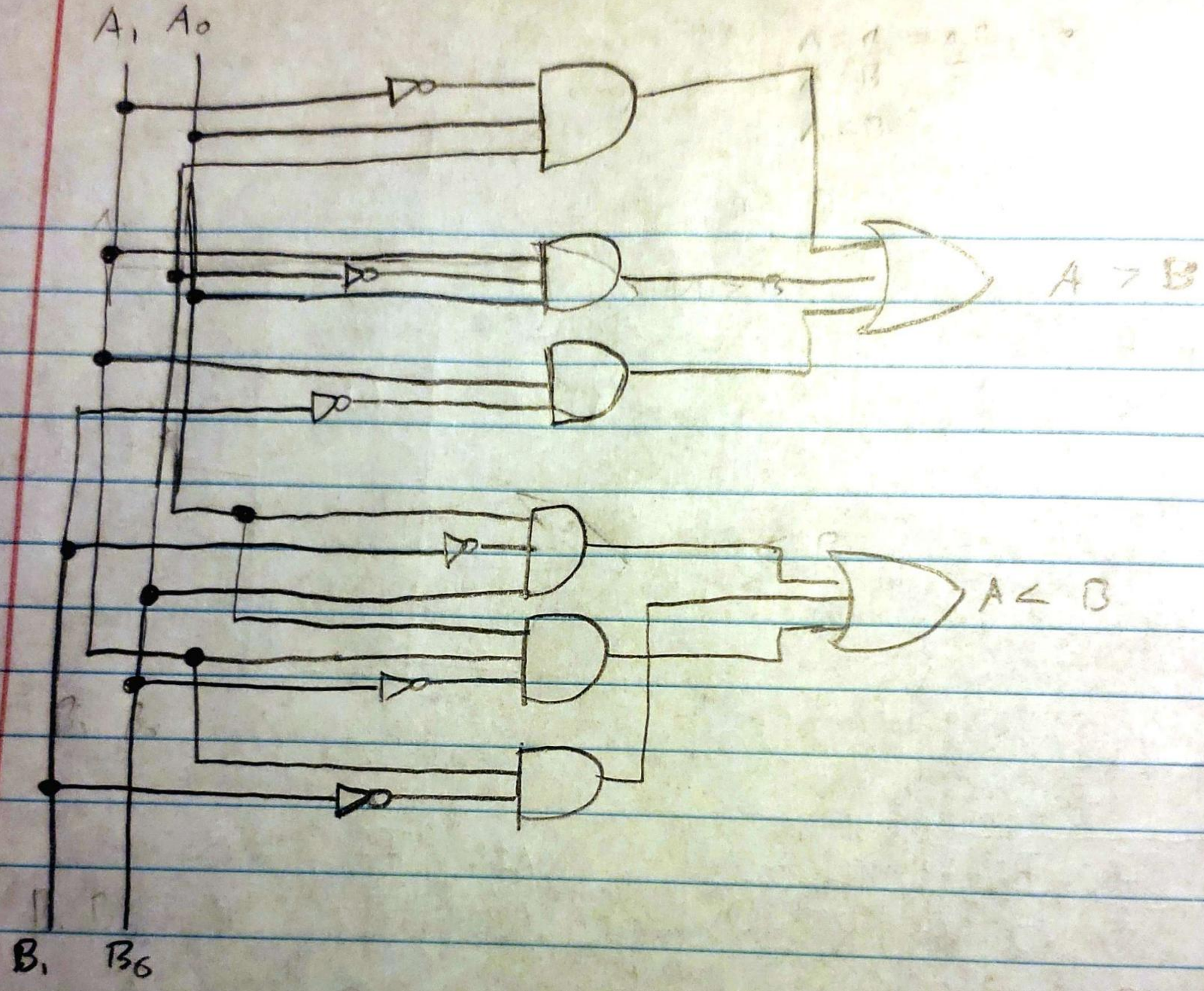



$A < B$: $A_0 \overline{B_1} B_0 + A_1 A_0 \overline{B_0} + \overline{A_1} B_1$

$A > B$: $\overline{A_1} A_0 B_0 + A_1 \overline{A_0} \overline{B_0} + A_1 \overline{B_1}$

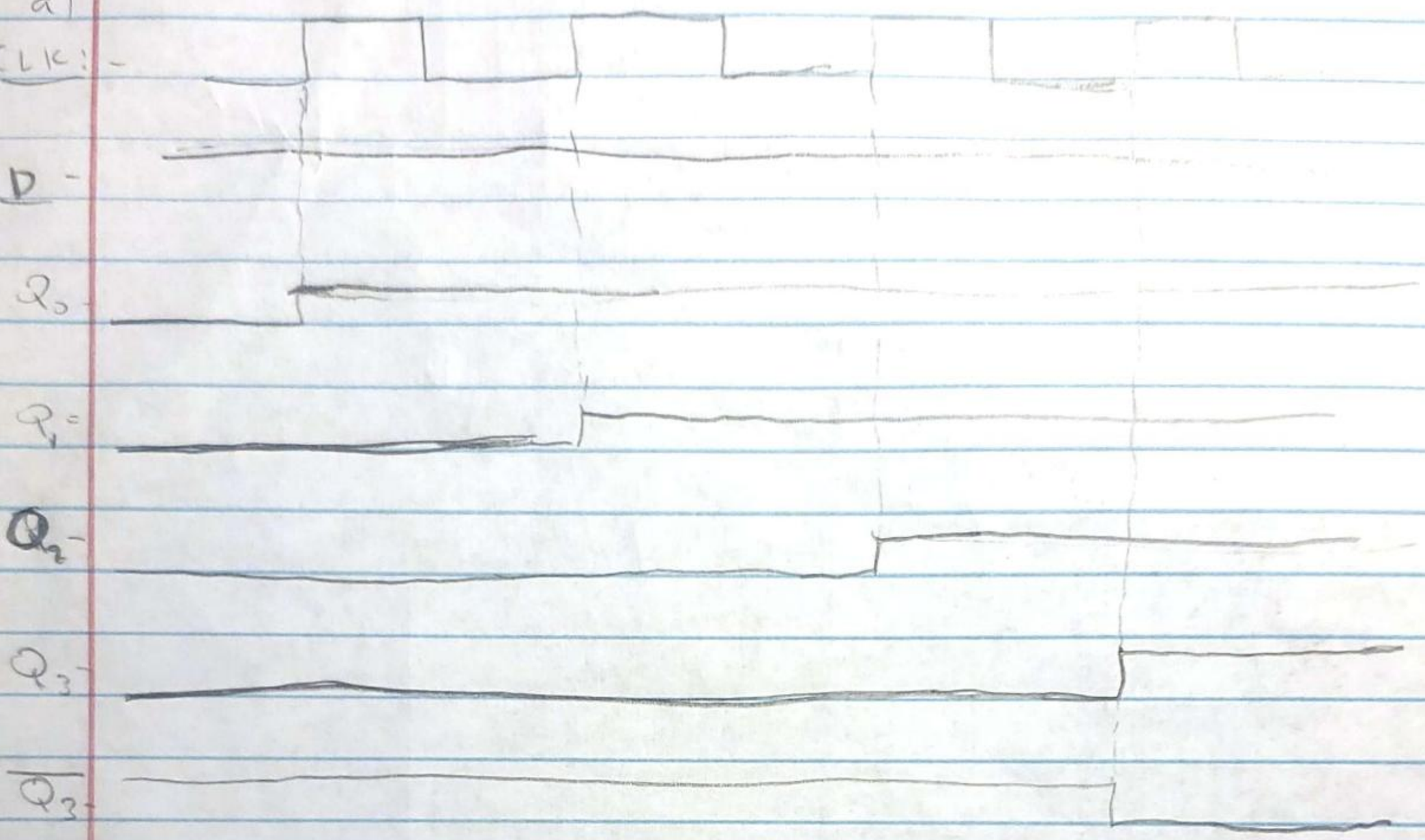
$A = B$: $A_1 B_1 + A_0 B_0$

1)

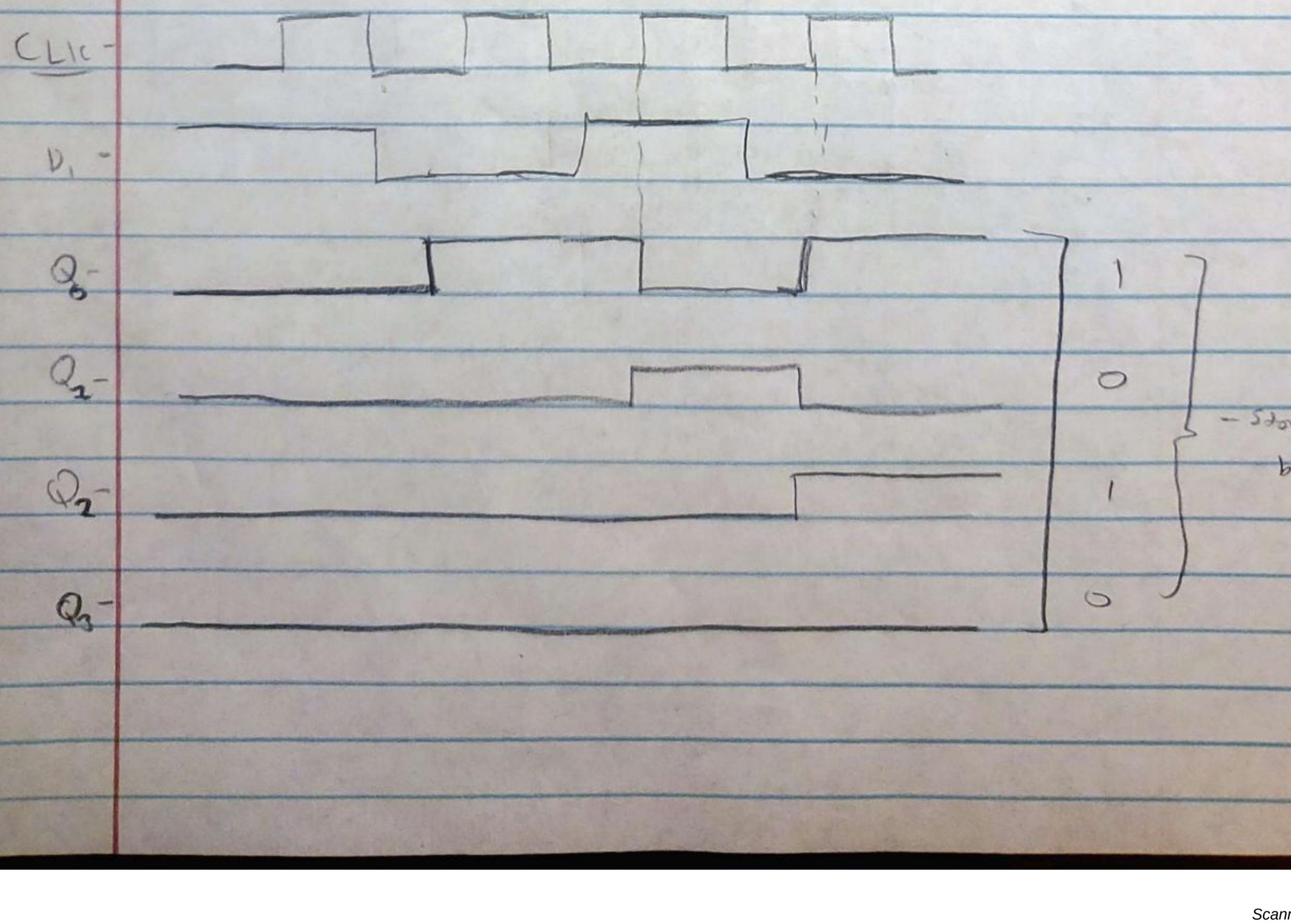


Ch.7

5) a)




b) Flip-flops stop works when inputs are equal to the output, because they not influence the output.



c)