Saaif Ahmed
661925946

10/14/19
ahmeds7

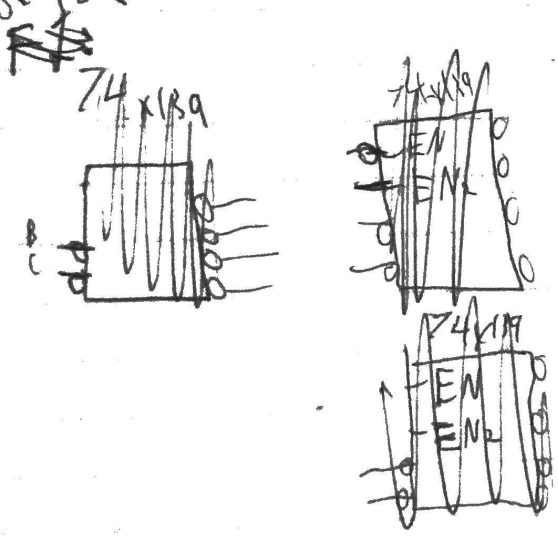
CoCo HW #6

6.24:

~~This circuit will detect if there is more than 4 HIGH input and output 0 if it's a~~

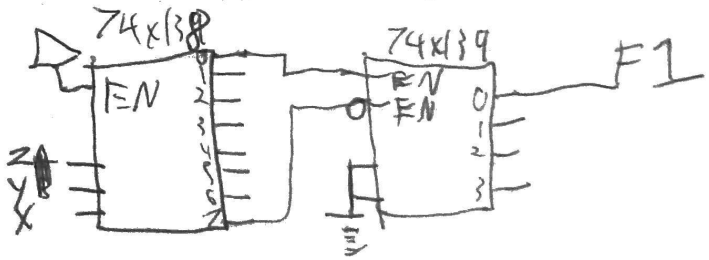
The circuit will detect an odd number of 1's in the input and output 0 if there is an even number of 1's.

6.43:

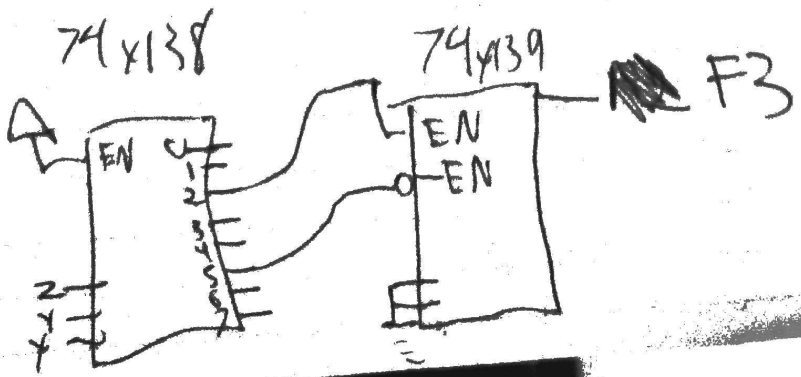


F1:

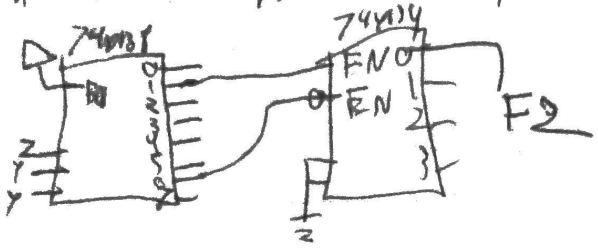
74x138: Active HIGH - HIGH
74x139: Active HIGH - HIGH



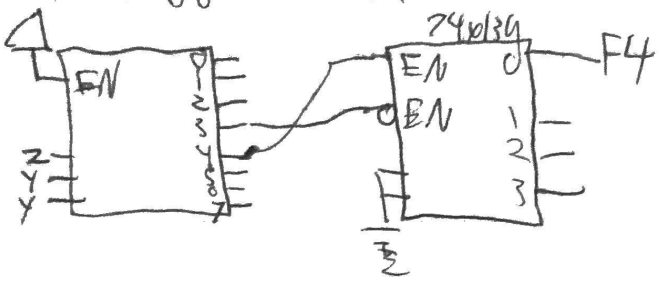
F3: 74x139 Active HIGH - HIGH
74x138 Active HIGH - HIGH



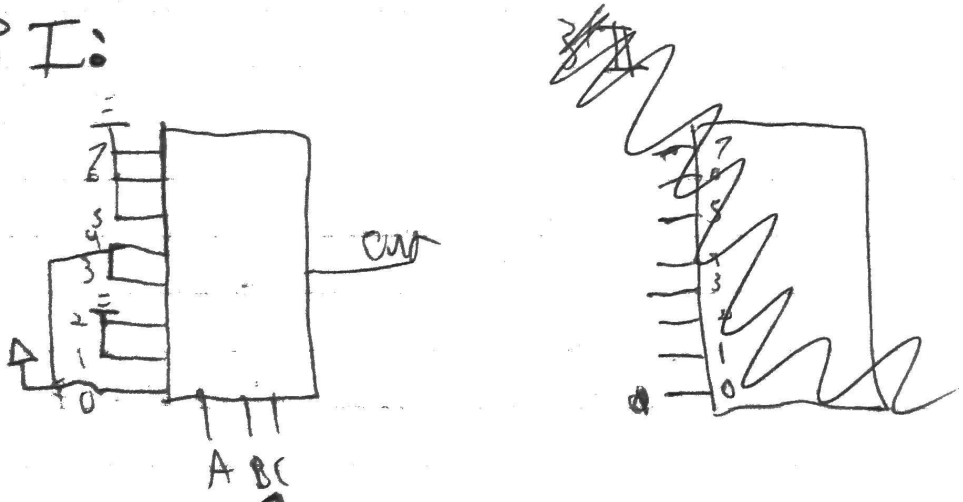
F2 [redacted]: Both Chips Active High- High



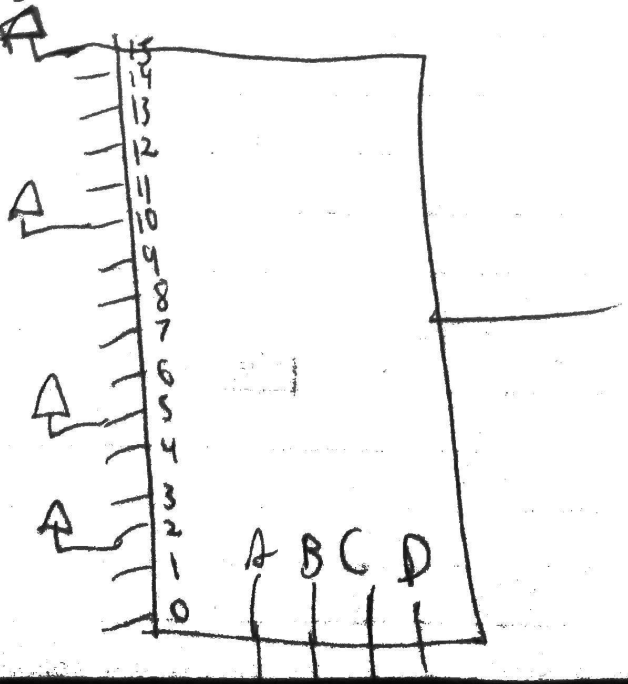
F4: 74x138 Active H-H



3 I:

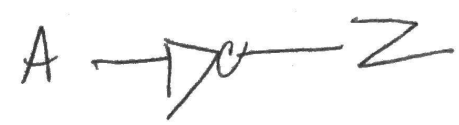


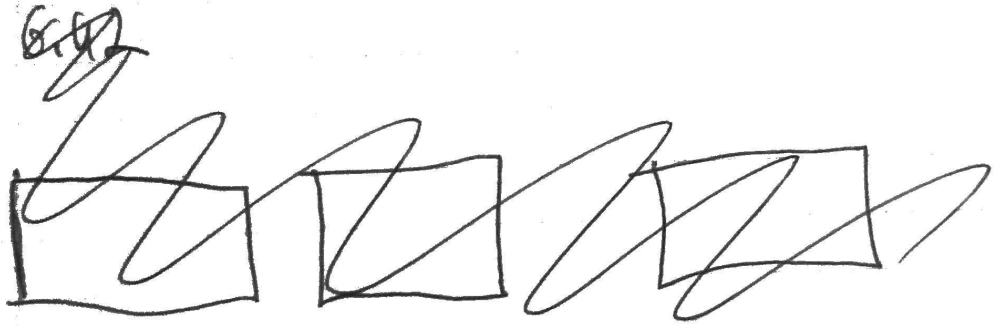
3 II:



6.81:

A	B	C	Z
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	0

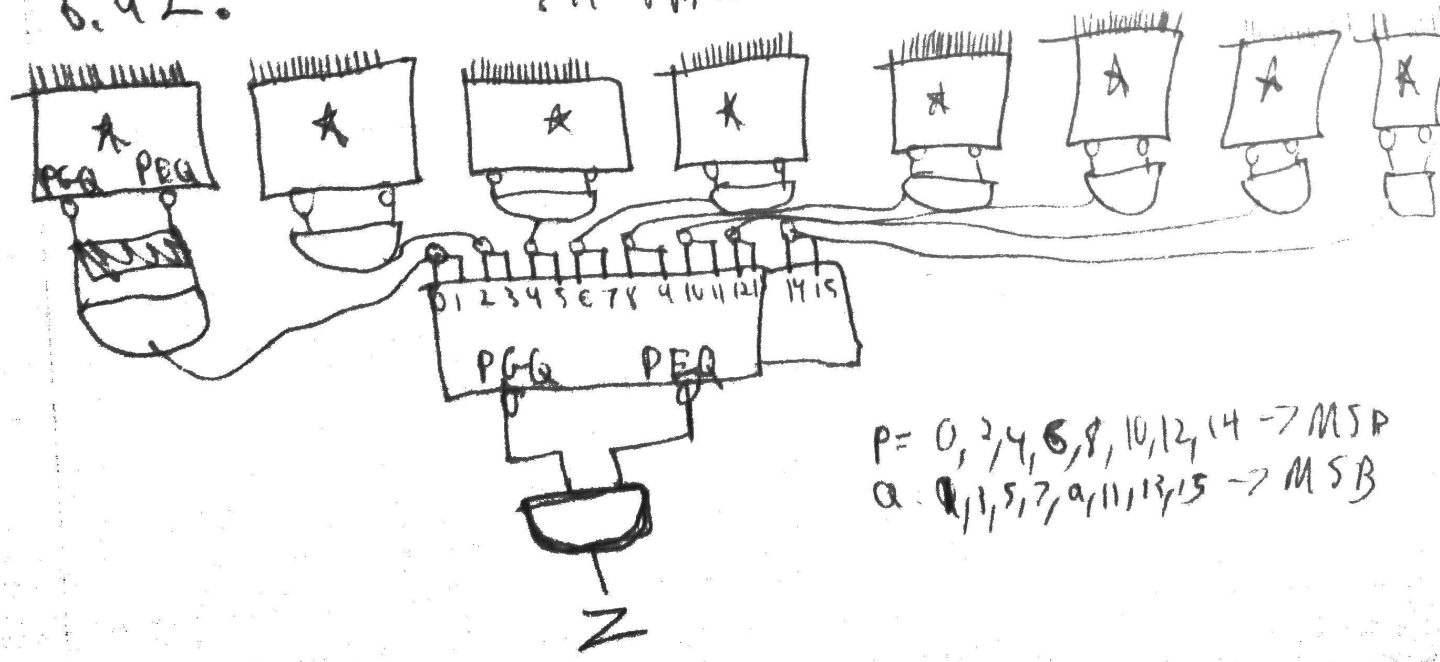




6.92:

All Inputs

MSB



P = 0, 2, 4, 6, 8, 10, 12, 14 → MSB

Q = 1, 3, 5, 7, 9, 11, 13, 15 → MSB

6. A: IV because it is the smallest number so there will be less dependency on Carry calculations

B: III because it is the largest and therefore will have the largest dependency on carry values.

HW #6 Resubmission:

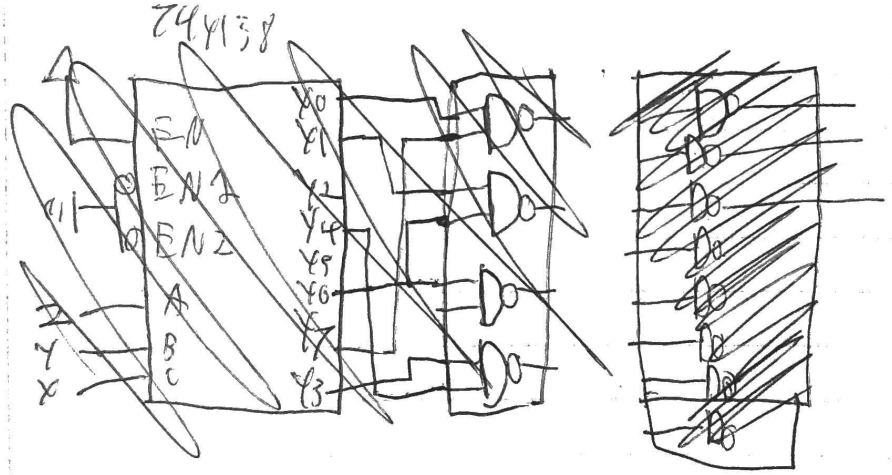
2. It detects the parity of the number. Or whether it is even or not. This circuit can tell if the input is even.

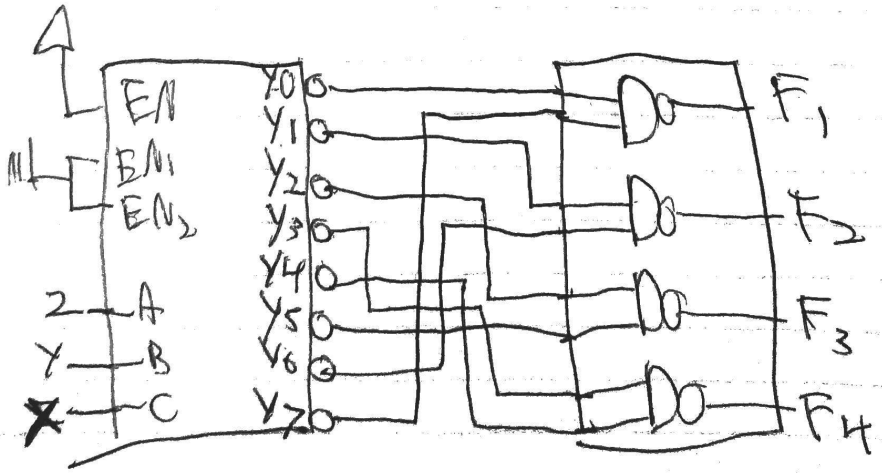
2. $F_1 = X'Y'Z' + XYZ$ (0, 7)

$F_2 = X'Y'Z + XYZ'$ (1, 6)

$F_3 = X'YZ' + XY'Z$ (2, 5)

$F_4 = XY'Z' + X'YZ$ (3, 4)





4.

A	B	C	Z
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1

~~A~~ B

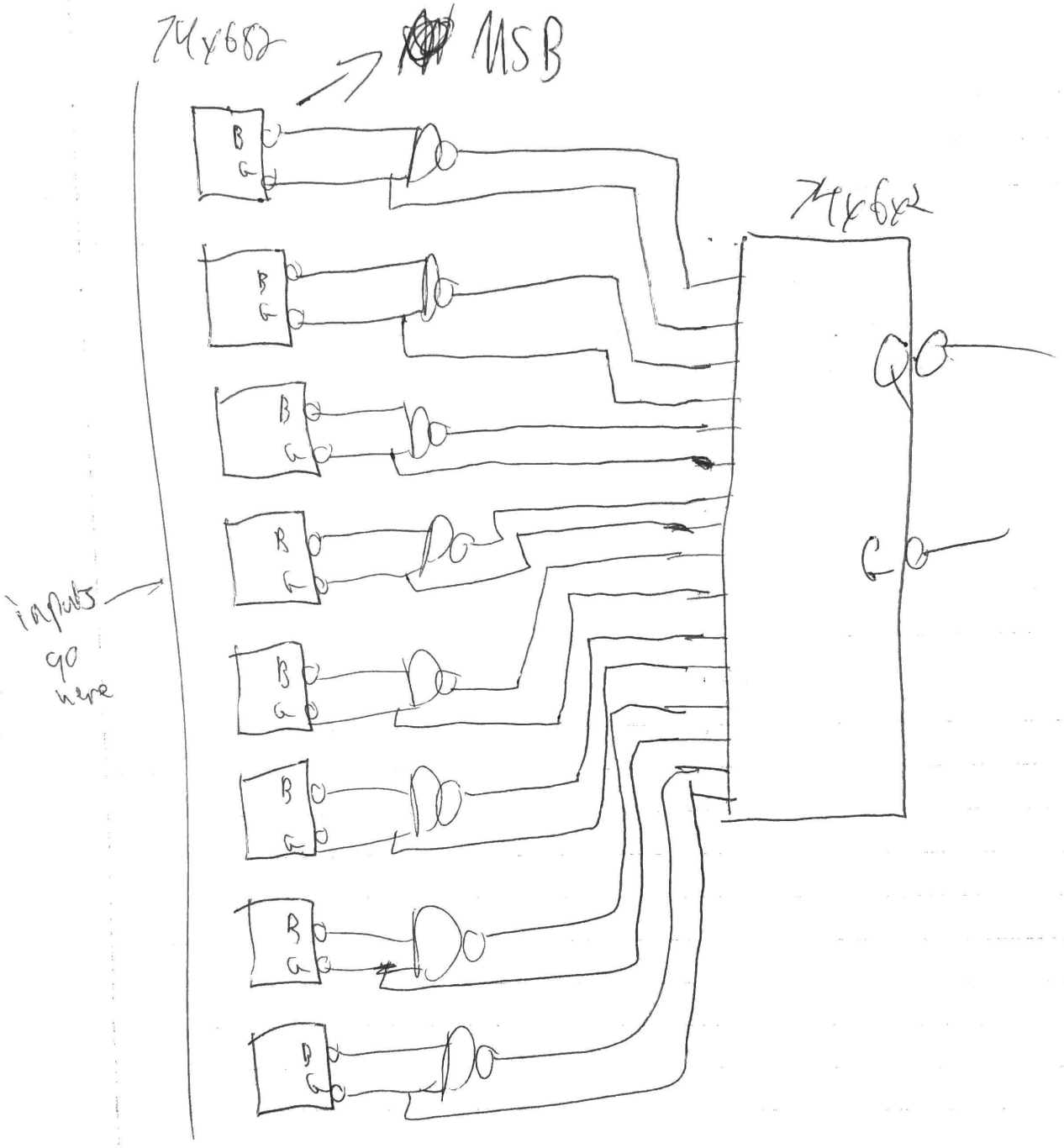
$\bar{A}\bar{B}C + \bar{A}B\bar{C} + A\bar{B}\bar{C} + ABC = Z$

* There isn't much to say here. I just analyzed the circuit incorrectly. I believe I thought the input was always tied to A because the other paths always seemed closed off.

6. (a) iii. This value has minimal carry operations unlike what I thought. Therefore it will run the fastest

(b) II. This value has the most carry outs so it will take longer.

5.



* I was almost to this solution. I thought that the outputs should feed into an AND instead of NAND. I also tied the inputs together on the layer 2 chip ~~that~~ which didn't make sense. I see what I did need to do. Comparing the G output would immediately show which one is greater.