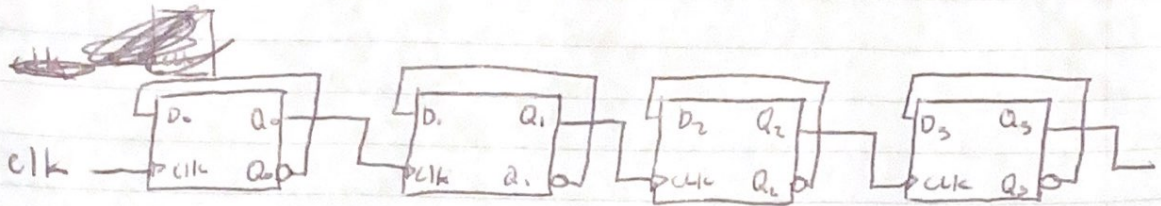
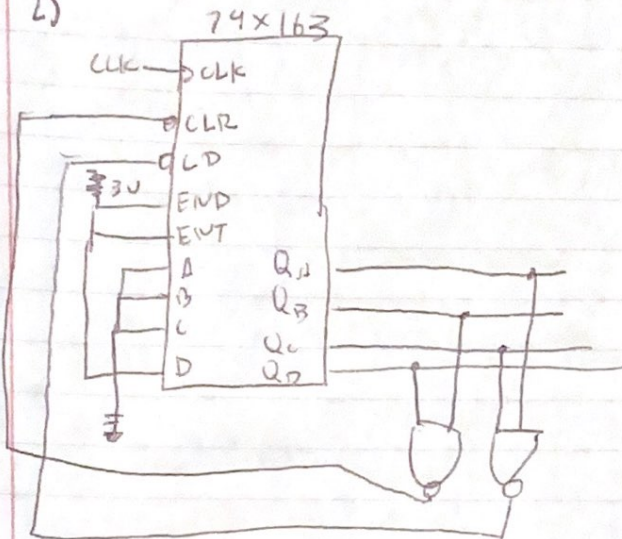


1) Design a 4-bit ripple down counter only using 4 D-Flip Flops

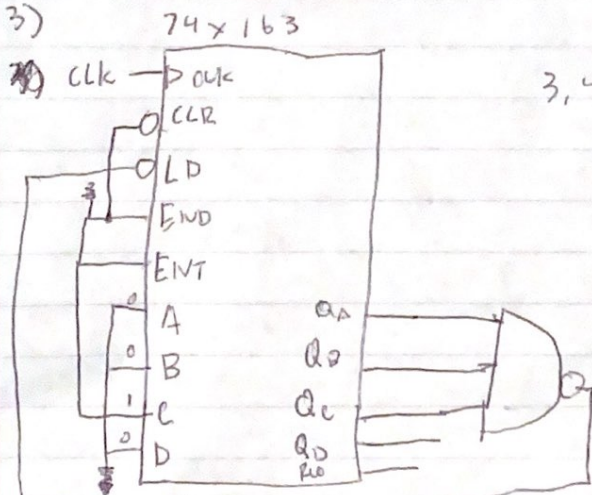


2)



Q <sub>3</sub>	Q <sub>2</sub>	Q <sub>1</sub>	Q <sub>0</sub>	LD-L	CLR-L
0	0	0	0	1	1
0	0	0	1	1	1
0	0	1	0	1	1
0	0	1	1	1	1
0	1	0	0	1	1
0	1	0	1	0	1
1	0	0	0	1	1
1	0	0	1	1	1
1	0	1	0	1	0
clear					
0	0	0	0	1	1
0	0	0	1	1	1
0	0	1	0	1	1

3)

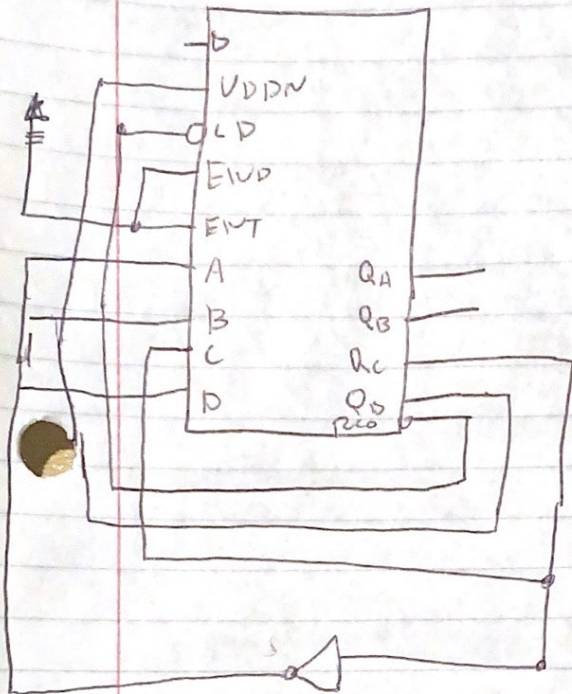


3, 4, 5, 6, ... 12, 3, 4, 5, 6

5) 74x169

3 inputs

counting sequence 4, 3, 2, 1, 0, 11, 12, 13,  
14, 15, 4, 3



0100  
0011  
0010  
0001  
0000

1011  
1100  
1101  
1110  
1111

opposites