

Homework #4

4. $\Sigma_1 = 0$, $C_{out} = 1$

$\Sigma_2 = 0$, $C_{out} = 1$

$\Sigma_3 = 1$, $C_{out} = 1 = \Sigma_4$

$$\begin{array}{r} 111 \\ 111 \\ + 101 \\ \hline 1100 \end{array}$$

7. $\Sigma_0 = 1$, $C_{out} = 1$

$\Sigma_1 = 0$, $C_{out} = 1$

$\Sigma_2 = 1$, $C_{out} = 0$

$\Sigma_3 = 1$, $C_{out} = 0$

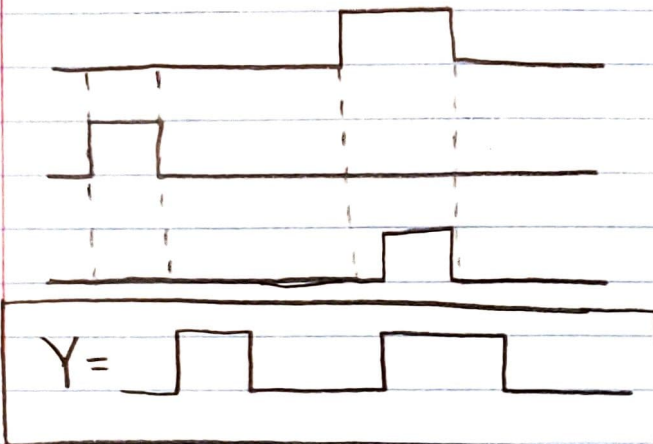
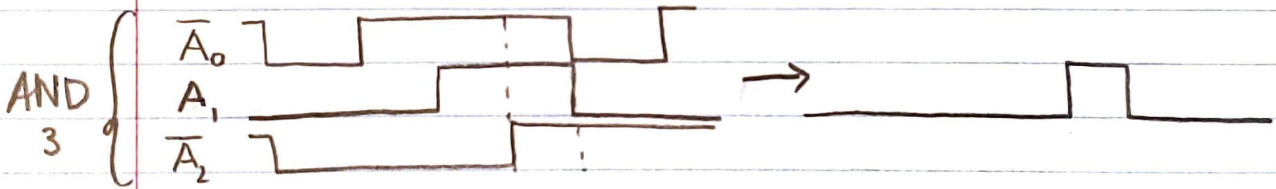
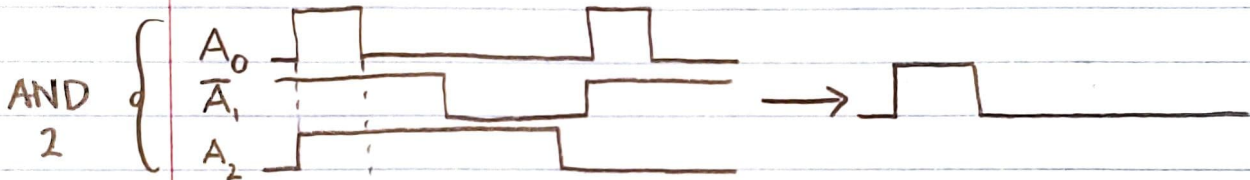
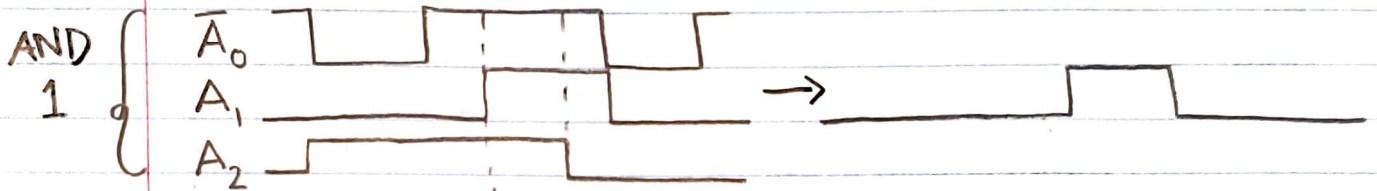
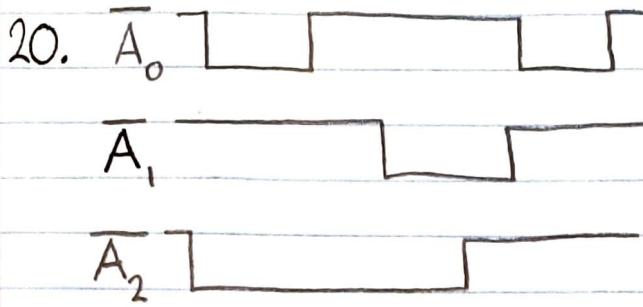
Out = 1101

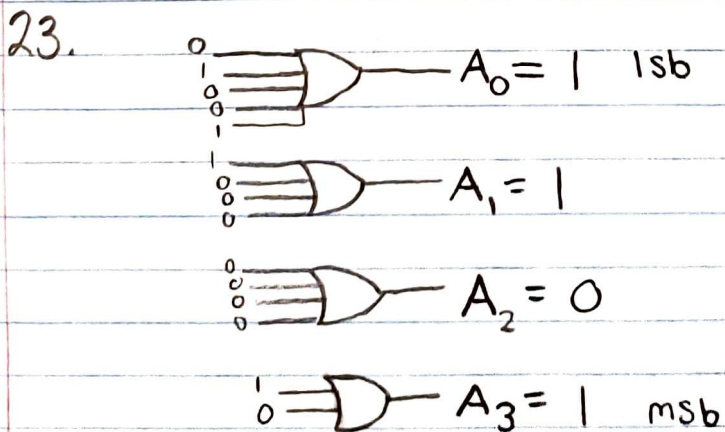
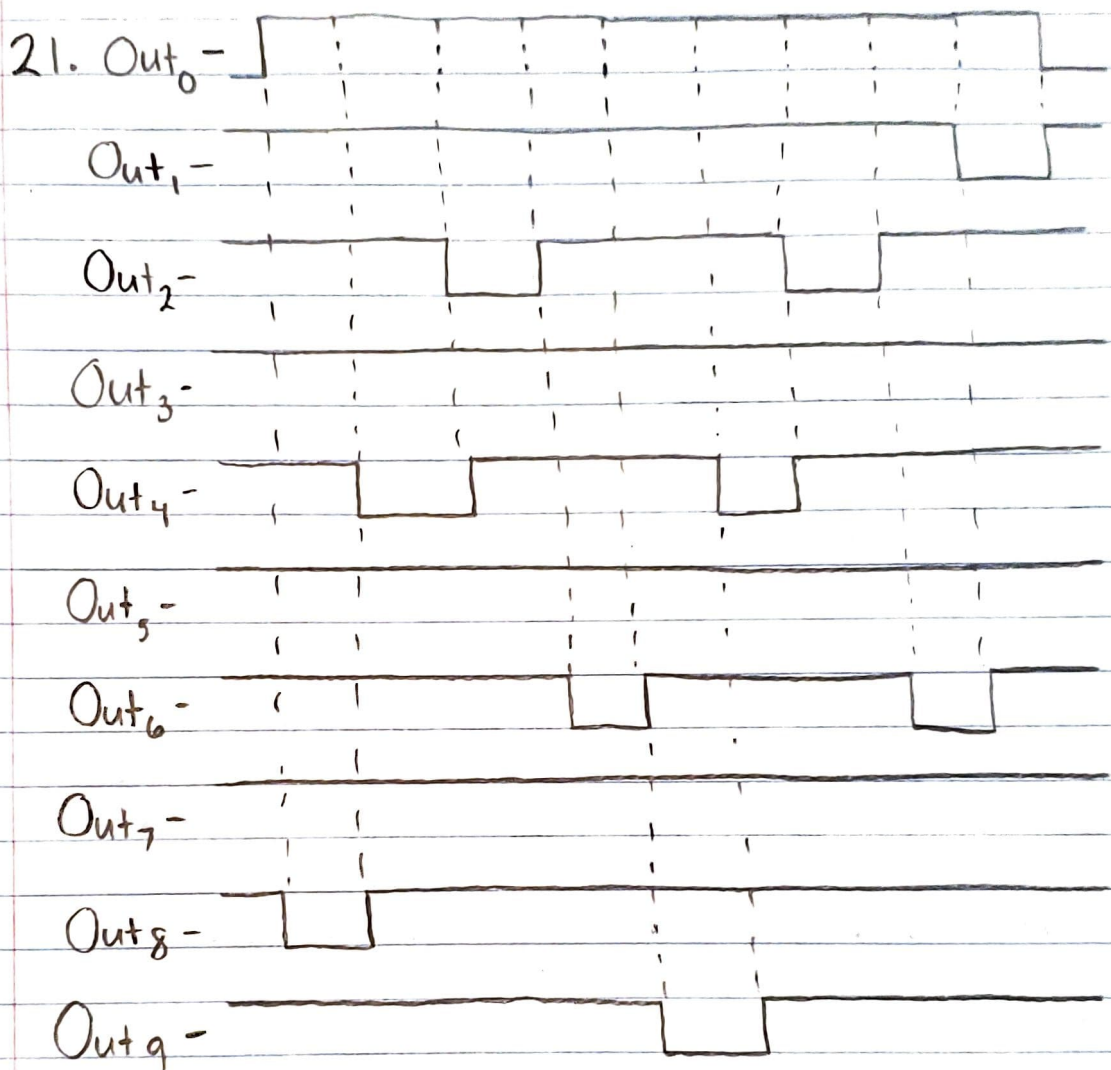
11. I couldn't figure out how to get maximum time...

15. a) $A > B$ is HIGH, others are LOW

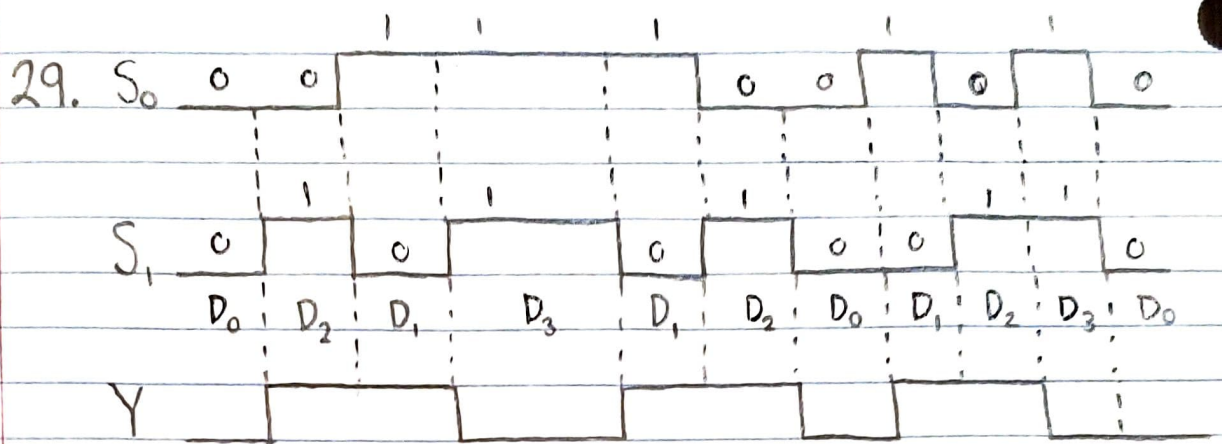
b) $A < B$ is HIGH, others are LOW

c) $A = B$ is HIGH, others are LOW





Output = 1011 ; Not Valid BCD code



34. Fault 1 — $A=0, B=0, C_{in}=0, \Sigma=1, C_{out}=0$

Fault 2 — $A=0, B=1, C_{in}=0, \Sigma=0, C_{out}=1$

Fault 3 — $A=1, B=0, C_{in}=0, \Sigma=0, C_{out}=1$

Fault 4 — $A=1, B=1, C_{in}=0, \Sigma=1, C_{out}=1$

The sum is not being added correctly and the C_{out} is carrying wrong.

45. $\Sigma = \bar{A}\bar{B}C_{in} + \bar{A}B\bar{C}_{in} + A\bar{B}\bar{C}_{in} + ABC_{in}$

$C_{out} = \bar{A}BC_{in} + \bar{A}\bar{B}C_{in} + A\bar{B}\bar{C}_{in} + ABC_{in}$

$AB \backslash C_{in}$	0	1
00		1
01	1	
11		1
10	1	

→ Same expression

$AB \backslash C_{in}$	0	1
00		
01		1
11	1	1
10		1

→ Can simplify to

$C_{out} = BC_{in} + AB + AC_{in}$