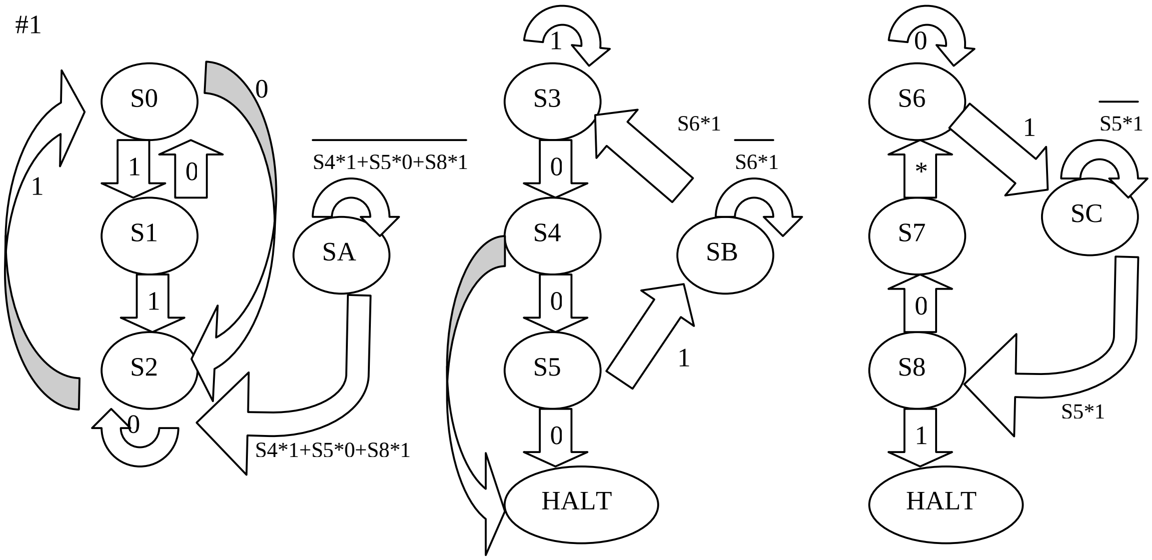
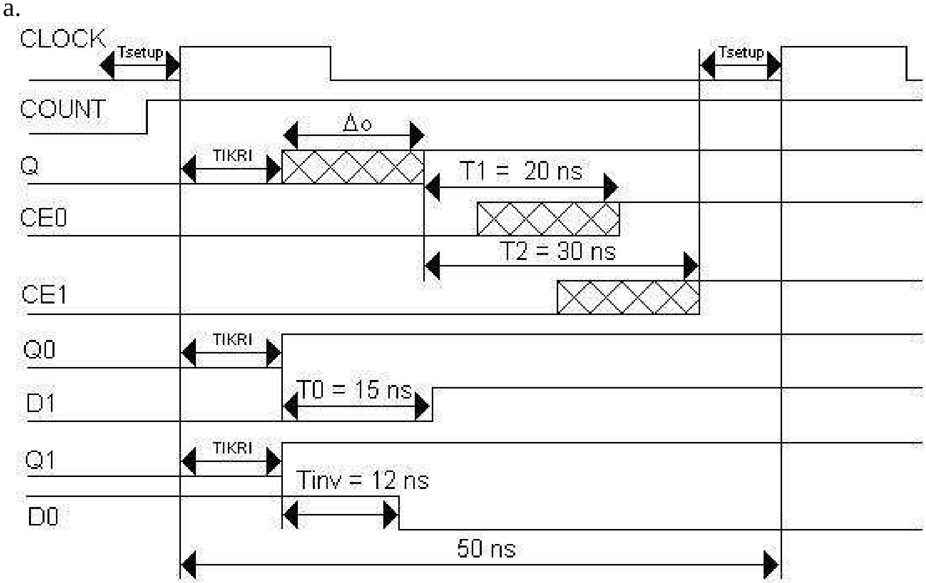
cs150 homework #12 solutions

#1



#2

a.



$\Delta o = 50 - 5.6 - 30 - 4 = 10.4$ ns

b.

$$\frac{1}{MTBF} = f1 \cdot f2 \cdot K1 \cdot e^{-K2 \cdot t}$$

$$20 \cdot 10^{6} \cdot 20 \cdot 10^{3} \cdot 1.5 \cdot 10^{-10} \cdot e^{-3.7 \cdot 10.4} = 1.165 \cdot 10^{-15} \quad /s$$

c.

$$\frac{1}{MTBF} = f1 \cdot f2 \cdot K1 \cdot e^{-K2 \cdot t}$$

$$20 \cdot 10^{6} \cdot 20 \cdot 10^{3} \cdot 1.5 \cdot 10^{-10} \cdot e^{-3.7 \cdot 2.4} = 0.008 \quad /s$$

#3

	fault-type	a	b	c	y(proper)/y(improper)	
node1	sa0	0	1	1	0/0	can’t be detected
	sa1	1	0	1	0/0	can’t be detected
node2	sa0	1	1	1	1/0	
	sa1	1	0	1	0/1	
node3	sa0	1	1	1	1/0	
	sa1	1	1	0	0/1	
node4	sa0	1	1	1	1/0	
	sa1	1	0	1	0/0	can’t be detected
node5	sa0	1	1	1	1/0	
	sa1	1	1	0	0/1	
node6	sa0	1	1	1	1/0	
	sa1	0	1	1	0/1	

node1 has stuck @ 0 fault that can’t be tested
node1 and node4 has stuck @ 1 fault that can’t be tested
a set of test vectors could be {1,1,1}:1, {1,0,1}:0, {1,1,0}:0, {0,1,1}:0