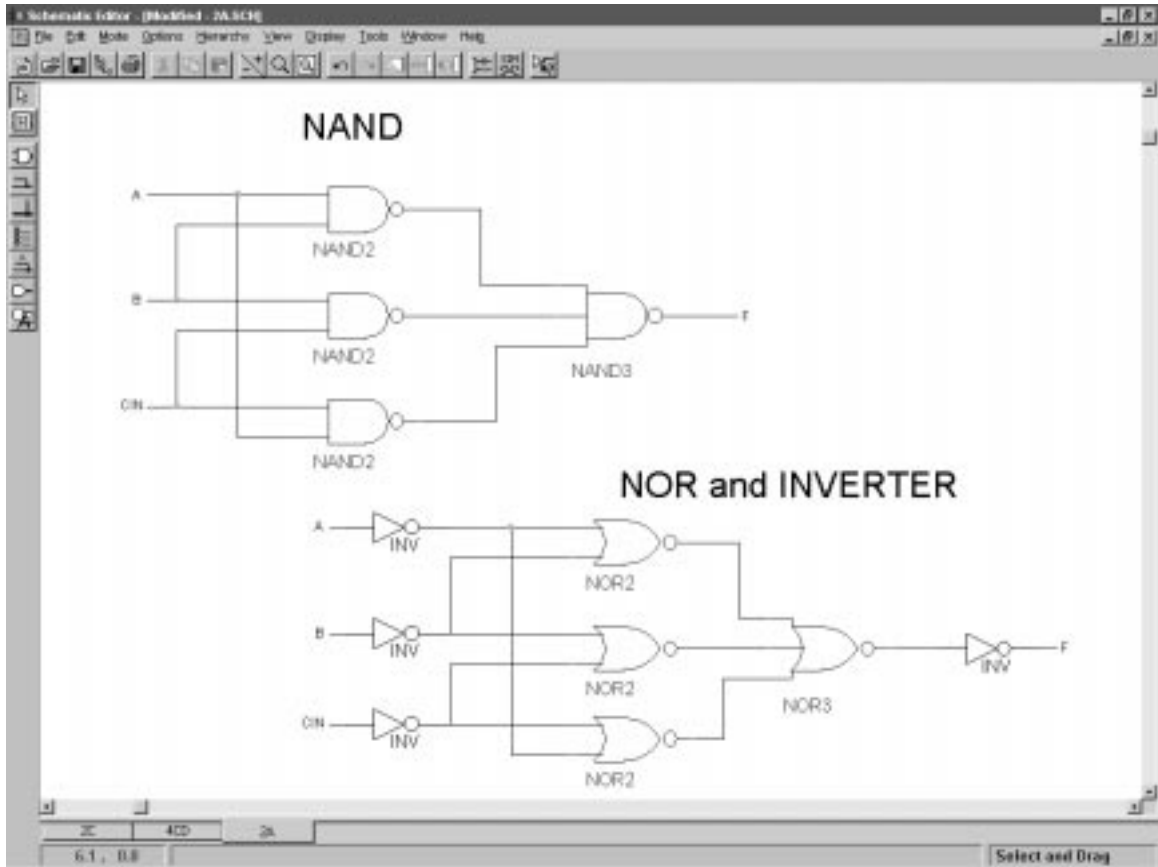


Solutions for Problem Set # 3

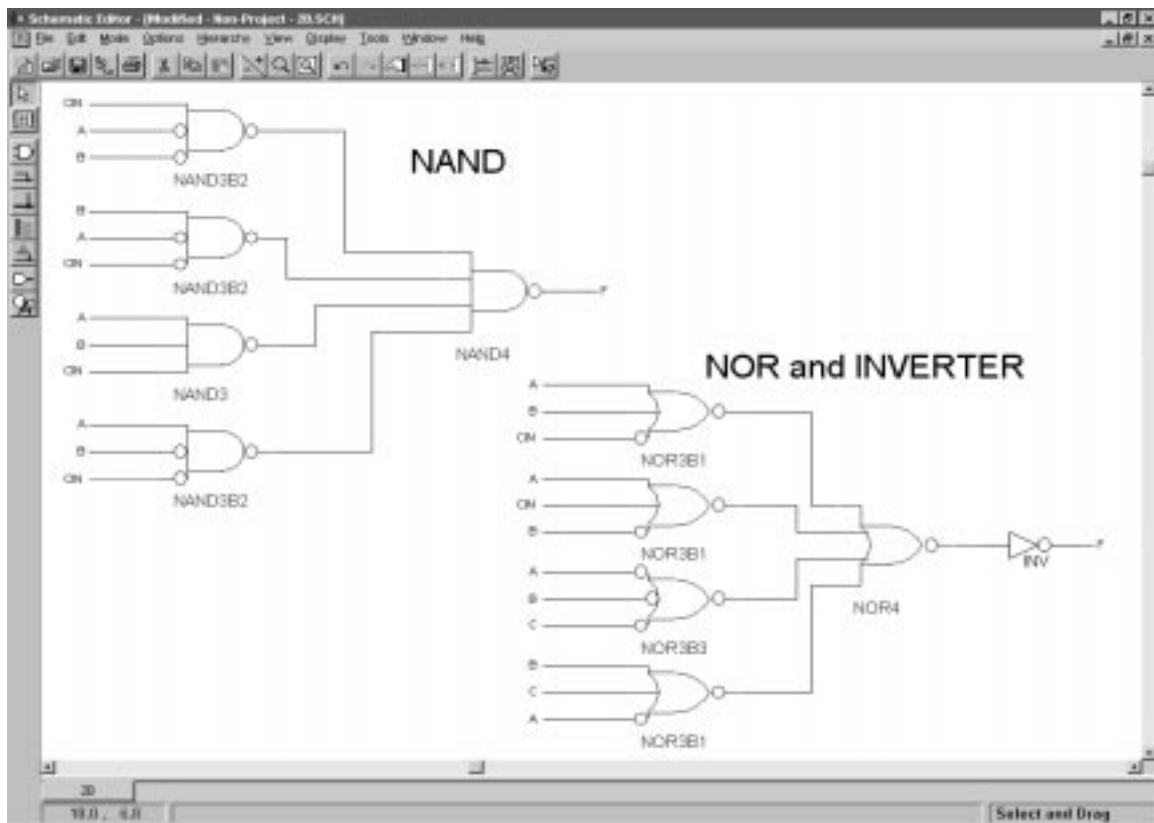
Problem # 2

a)

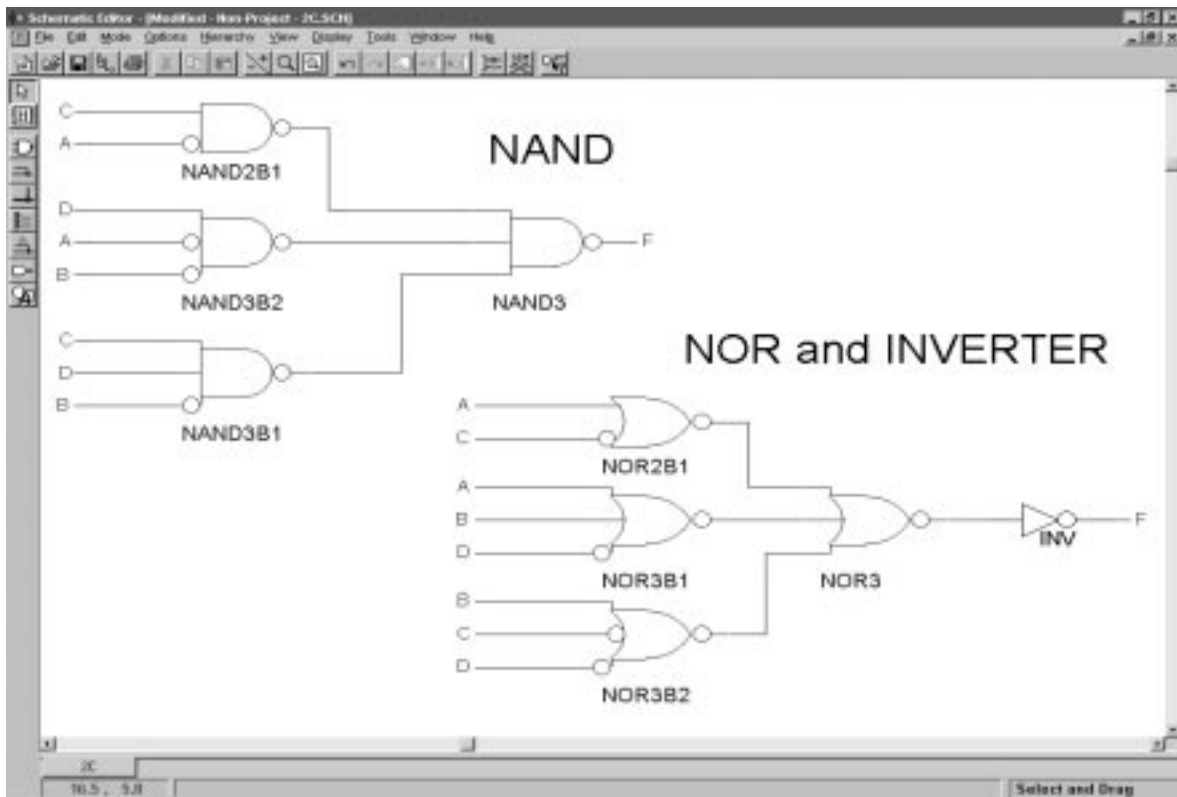


b) $F(A,B,C,D) = A \oplus B \oplus C_{in}$
 $= A'B'C_{in} + A'B'C' + ABC + AB'C'$

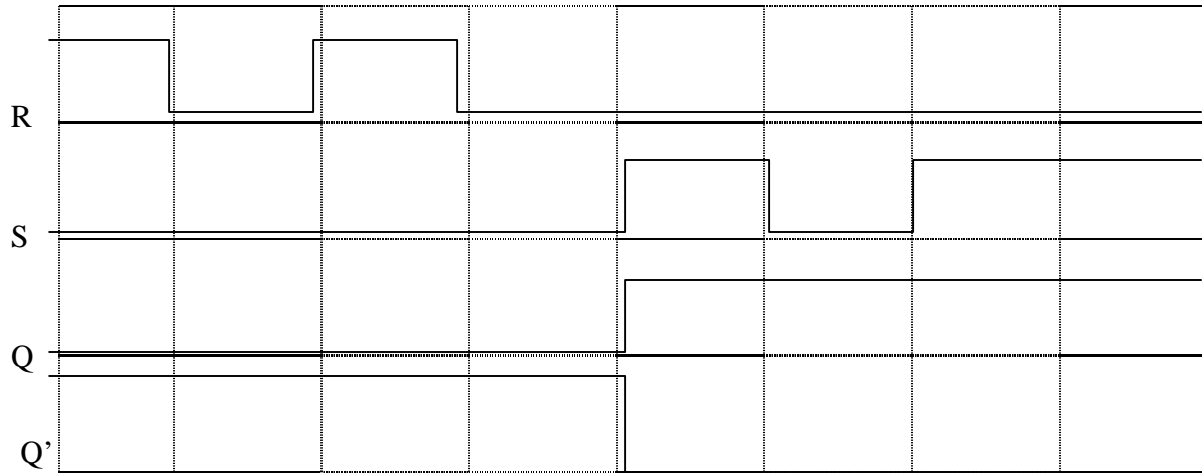
	AB			
C	0	1	0	1
	1	0	1	0



c) $F(A,B,C,D) = A'C + A'B'D + B'CD$



Problem # 3



From the above timing diagram, we see that when the switch is on and off repeatedly with respect to R, Signal Q remains off as long as the switch doesn't connect to S. However, as soon as the switch is connected to S, Q is turned to high. The Q remains high as long as the switch doesn't reconnect with R, regardless how S is toggling. But it goes low again when the switch and R reconnect. One application of this characteristic is to ensure that a correct on / off signals would be sent out when we push or release a button all way down or up, not in the middle way. This eliminates control error.

Problem # 4

