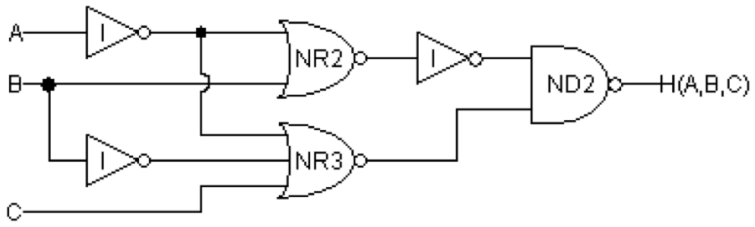
LE3.5.1: Timing

2/2 points (ungraded)

Consider the following circuit that implements the 3-input function H(A,B,C):



Using the following table of timing specifications for each component, what are the contamination delay t_{CD} and the propagation delay t_{PD} for the circuit shown above?

gate	t_{CD}	t_{PD}
I	3ps	15ps
ND2	5ps	30ps
NR2	5ps	30ps
NR3	10ps	50ps

t_{CD} (in picoseconds): 13 ✔ Answer: 13

t_{PD} (in picoseconds): 95 ✔ Answer: 95

Explanation

Shortest path for t_{CD} is NR2 + I + ND2. So $t_{CD} = 5 + 3 + 5 = 13ps$.

Longest path for t_{PD} is I + NR3 + ND2. So $t_{PD} = 15 + 50 + 30 = 95ps$.

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? why isn't the longest path (I + NR2 +I + ND2) ? and the shortest path (NR3 + ND2)? 7

why isn't the longest path (I + NR2 +I + ND2) ? and the shortest path (NR3 + ND2)? please explain ...