

Homework Assignment No. 14

Due Friday, April 25, 2003 in class

Problem 1 - (10 points)

Problem 8.4-1 of Allen and Holberg, 2nd edition

Problem 2 – (10 points)

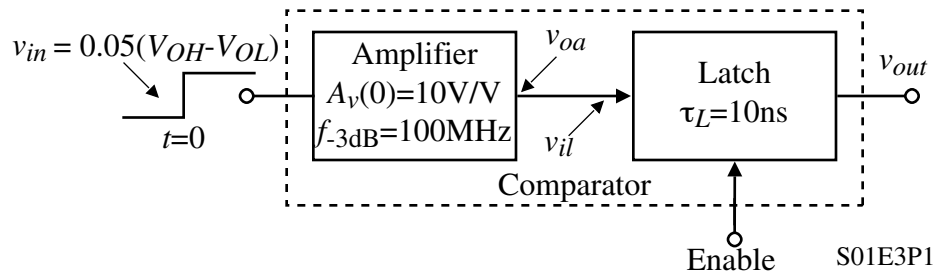
Problem 8.6-3 of Allen and Holberg, 2nd edition

Problem 3 – (10 points)

Problem 8.6-4 of Allen and Holberg, 2nd edition.

Problem 4 - (10 points)

A comparator consists of an amplifier cascaded with a latch as shown below. The amplifier has voltage gain of 10V/V and $f_{-3\text{dB}} = 100\text{MHz}$ and the latch has a time constant of 10ns . The maximum and minimum voltage swings of the amplifier and latch are V_{OH} and V_{OL} . When should the latch be enabled after the application of a step input to the amplifier of $0.05(V_{OH}-V_{OL})$ to get minimum overall propagation time delay? What is the value of the minimum propagation time delay? It may be useful to recall that the propagation time delay of the latch is given as $t_p = \tau_L \ln\left(\frac{V_{OH}-V_{OL}}{2v_{il}}\right)$ where v_{il} is the latch input (ΔV_i of the text).



Course Evaluation

Please give your instructors feedback by filling out the on-line course evaluation forms. We do read these and will take your comments, both positive and negative, into consideration for future courses.