Assignment 1 Name > Tyaswee Swelch 21 August 2023 19:30 Rell No -> 200070082 Rise/full time = 2×NN + 200 PScc → Rise time = 2001 164 pSec = 364 pSec After making changes to the nethist and trying different values of Pan Channel width. I observed the required characteristics for the following width. No. of Data Rows : 35059 $W_n = 0.3161 \, \mu m$ = 1.600000e-11 targ= 8.018000e-09 trig= 8.002000e-09 inrise infall = 1.600000e-11 targ= 1.203800e-08 trig= 1.202200e-08 drise = 3.640301e-10 targ= 1.243949e-08 trig= 1.207546e-08 $W_{p} = 1.053 \mu m$ dfall = 3.640578e-10 targ= 8.426535e-09 trig= 8.062477e-09 ngspice 3 -> when these were the measure rise/ time. Q2 After changing transient analysis to D(analysis and doing a OK sweep over the input volker we get the following Aboks 0.4 2(U(dutowt)) us v(gnput) V (dutout) us v (Input) 4 Plots 2 (U(gnput) After getting the value where the slope is equal to -1 from plot 2. x0 = 0.696923, y0 = -1x0 = 0.696931, y0 = 1.67899x0 = 0.962217, y0 = -0.999922x0 = 0.962222, y0 = 0.1154117 (oordinates from Act 1 2 (oordinates from plot 2 Thurspre (0.6969, 1.6789) -> (Viz, Vou) (0.9622, 0.1154) -> (ViH, Vol) from this High noise margin is given by VOH - ViH = 1.6789 - 0.9622 = 0.7156 Similarly Low noise murgin in given by Vil-Vol = 0.6969 - 0.1154 = 0.5814(MOS Logic of 4.(B+C) using the series small sull covered After Smplementing this CMOS the plots observed for different input values is shown below: A=(1), b=0), C=0-1 and C=1-0drise = 7.922895e-10 targ= 1.291441e-08 trig= 1.212212e-08 = 6.641642e-10 targ= 8.771687e-09 trig= 8.107523e-09 These were the rise/fall time observed in the output 2.0 5.0 15.0 20.0 10.0 25.0 30.0 35.0 time $A=(1), (=(0)), B=(0) \rightarrow 1 \text{ and } B=1-0$ drise 8.383041e-10 targ= 1.297817e-08 trig= 1.213987e-08 8.0+v(b)dfall 6.893527e-10 targ= 8.797637e-09 trig= 8.108284e-09 v(dutout) 12.0+v(c) vise/full time observed in the output 12.0 10.0 -2.0 15.0 25.0 35.0 $B = (1), (=6), A = 0 \rightarrow 1 \text{ and } A = 1 \rightarrow 0$ drise 3.748277e-10 targ= 1.245189e-08 trig= 1.207706e-08 dfall 6.215373e-10 targ= 8.711611e-09 trig= 8.090074e-09 12.0+v(c) 14.0 12.0 10.0 # Note: > How so that not all the signals overlap we add a de offset to the signals 5.0 10.0 15.0 20.0 25.0 30.0 35.0 time ns