EE671 VLSI DESIGN - Assignment 1

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Que 1:

Last 2 Roll Number digits = 52, therefore

Required rise and fall times = 200 + 2*nn ps

= 200 + 2*52 = 304 ps

Therefore the perimeters to achieve the above specification is given below:

For p channel;

Width = 1.2961392 um (Micro)

Source Area = Drain Area= 0.466610112 pm (Pico)

Source Perimeter = Drain Perimeter = 3.3122784 um

For n channel ;

Width = 0.4162298 um (Micro)

Source Area = Drain Area= 0.149842728 pm (Pico)

Source Perimeter = Drain Perimeter = 1.5524596 um

Que2:

To get the noise margins we will use V_il, V_ol, V_ih, V_oh;

The observed values are given below:

V_il = 0.70000000 V

V_ol = 0.08456925 V

V_ih = 1.00000000 V

V_oh = 1.68640500 V

High Noise Margin = V_oh - V_ih = 0.686405 V

Low Noise Margin = V_il - V_ol = 0.61543075 V

Que3:

Truth Table:

A	B	C	B+C	A.(B+C)	(A.(B+C))’
0	0	0	0	0	1
0	0	1	1	0	1
0	1	0	1	0	1
0	1	1	1	0	1
1	0	0	0	0	1
1	0	1	1	1	0
1	1	0	1	1	0
1	1	1	1	1	0

Transition Table:

Present	Future	Rise/Fall	Transition Time (in ps)
111	011	Rise	314
011	111	Fall	387
111	100	Rise	Nil
100	110	Fall	501
110	100	Rise	587
100	101	Fall	484
101	100	Rise	58