

ENEL 353 Section 02 Lecture

Wed Oct 23 2019

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Midterm 7:00 PM - 8:30 PM Mon Oct 28

Locations will be posted soon.

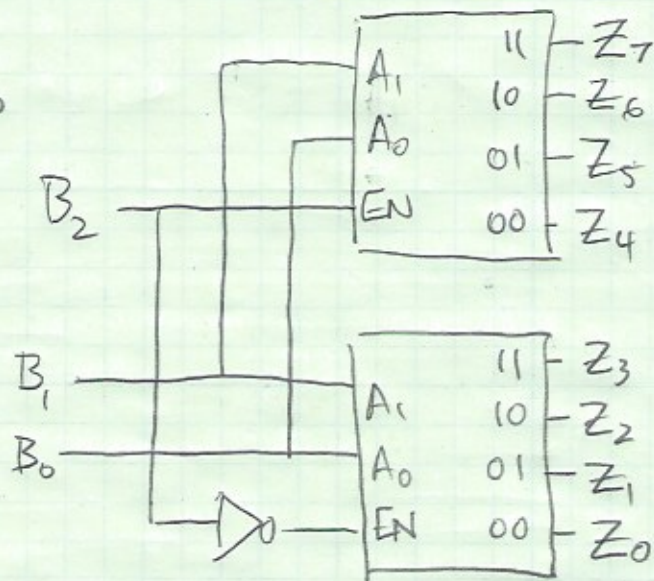
Set 6, Slide 20

EN	A ₁	A ₀	Y ₃	Y ₂	Y ₁	Y ₀
0	X	X	0	0	0	0
1	0	0	0	0	0	1
1	0	1	0	0	1	0
1	1	0	0	1	0	0
1	1	1	1	0	0	0

Slide 21

3:8 decoder

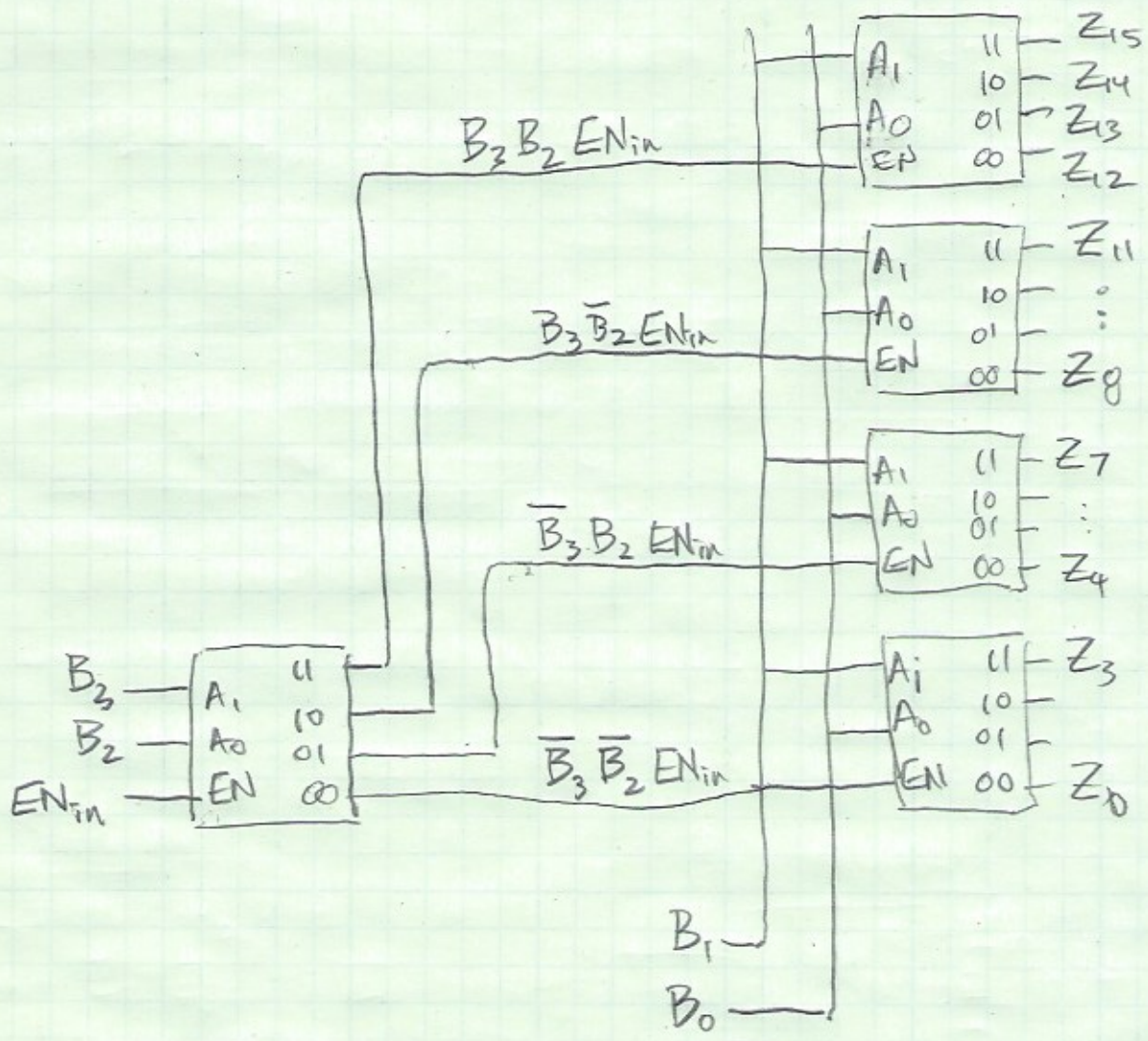
Let's use B₂, B₁, B₀
and Z₇, Z₆, ..., Z₀
as names for inputs
and outputs of the
3:8 decoder



4:16 decoder

Names for inputs: B_3, B_2, B_1, B_0

Names for outputs: $Z_{15}, Z_{14}, \dots, Z_0$



[End of midterm material.]

Slide 25

Transitions are shown as sloped lines, as a reminder that transitions are not instant.

Slide 26



An arrow like this indicates causation - in the example, the transition on A causes the later transition on Y.

Notes for Slide 30



This shows the two possible transitions on A — LOW-to-HIGH and HIGH-to-LOW

↑ This shows a collection of many possible transitions on Y, including the fastest and slowest possible transitions.

Slide 31

Rise in Y at $t = 150\text{ps}$

- caused by fall in A at $t = 100\text{ps}$
- NOT caused by fall in B at $t = 130\text{ps}$
- delay is $150\text{ps} - 100\text{ps} = 50\text{ps}$

Fall in Y at $t = 280\text{ps}$

- caused by rise in B at $t = 220\text{ps}$
- delay is $280\text{ps} - 220\text{ps} = 60\text{ps}$

Rise in Y at $t = 380\text{ps}$

- caused by falls in A and B at $t = 350\text{ps}$
- delay is $380\text{ps} - 350\text{ps} = 30\text{ps}$

Conclusions

t_{pd} is at least 60ps

t_{cd} is no more than 30ps

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