CPE201 HW 7 (100 points)

Answer all questions completely. Put a box around the final solution. Put your name on it. Show your work.

By hand:

1. Given the 4-bit comparator in Figure 1 and the following inputs, give all three output states.

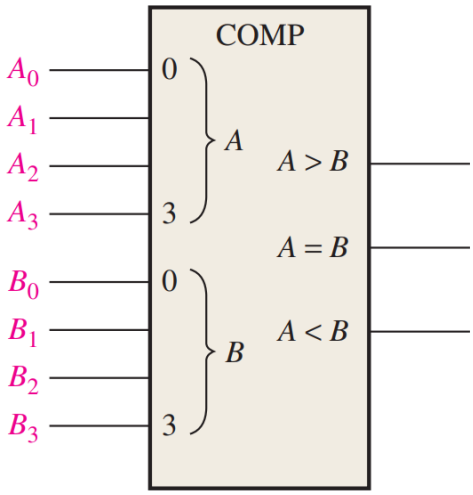


Figure 1

a. A = $A_3A_2A_1A_0$ = 1100
B = $B_3B_2B_1B_0$ = 1001

A>B = 1
A=B = 0
A<B = 0

b. A = 0100, B = 0101

A>B = 0
A=B = 0
A<B = 1

c. A = 0011, B = 0011

A>B = 0
A=B = 1
A<B = 0

2. Given the input waveforms in Figure 2, draw the output waveforms when the inputs go into a 4-16 decoder.

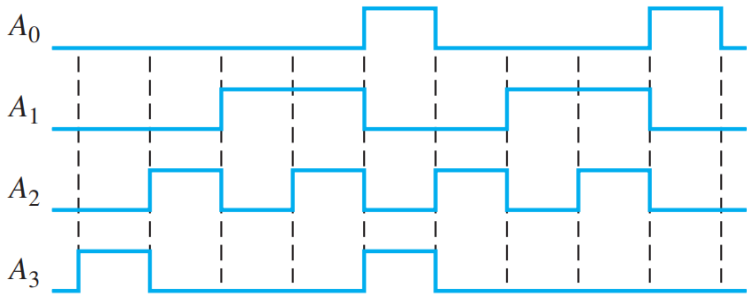
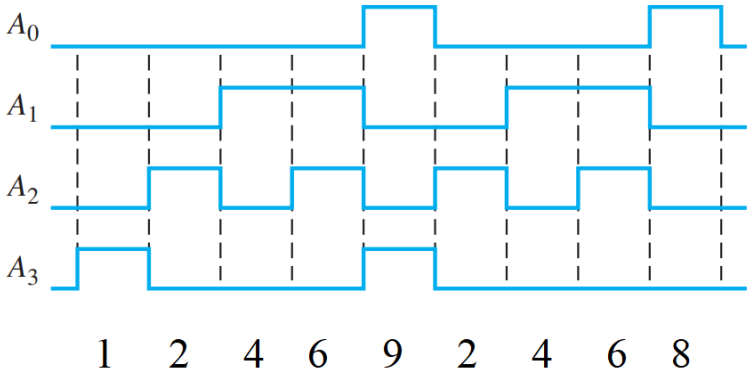


Figure 2

This problem can be done in 2 ways. Either have 16 output waveforms, each showing when in the input stream that the outputs go high OR one output waveform where each high line is labeled for each time segment. Below is the second option.



3. Given the inputs to a 74HC151 8-input multiplexer in Figure 3, draw the output waveform.

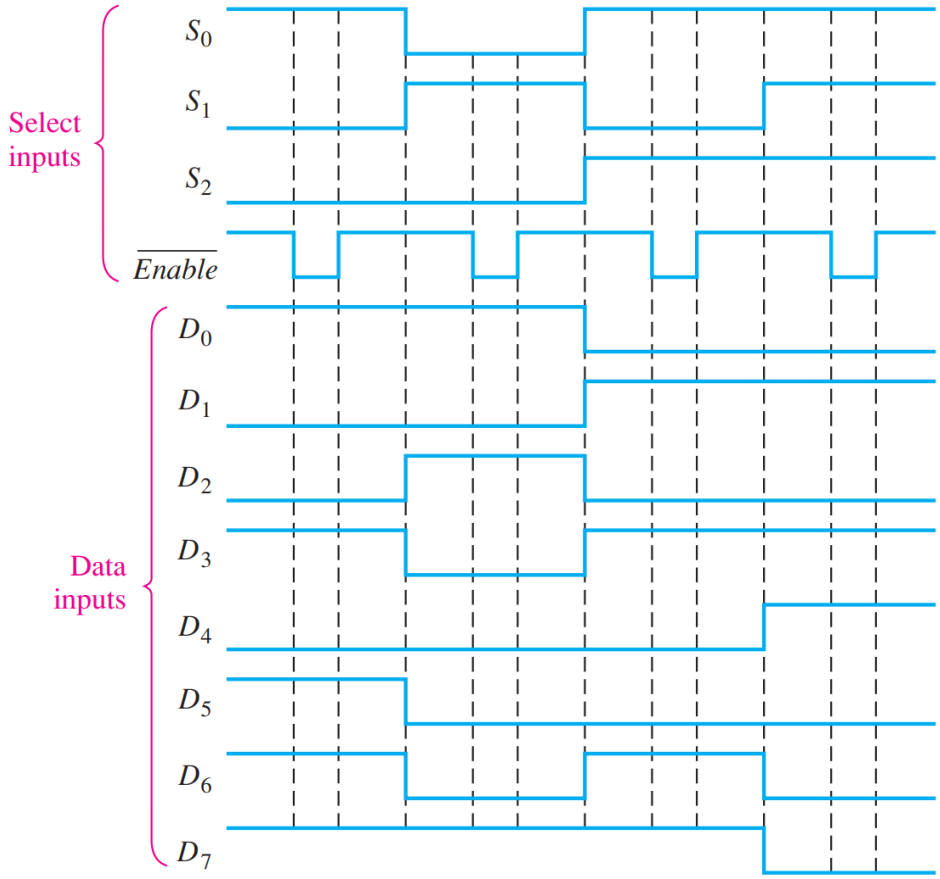
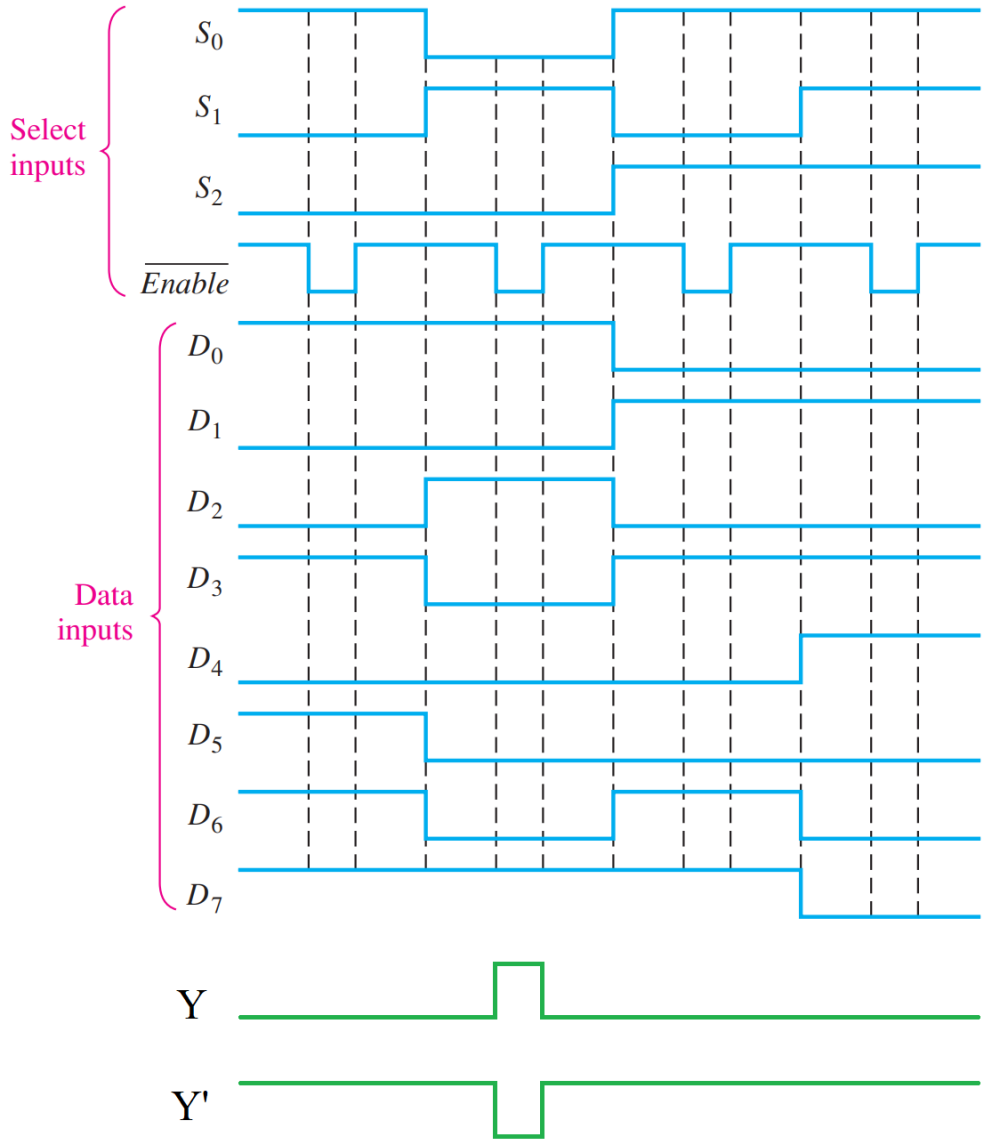


Figure 3

Note that the input can only be 1 when the enable line is low, so there are only 4 time segments where the output Y can be high. The output looks like this:



4. Given the 8 data inputs in Figure 4, give the output waveforms for both EVEN and ODD parity.

Using the note that if an even number of inputs are high, then the EVEN output is high, the output waveforms are given below.

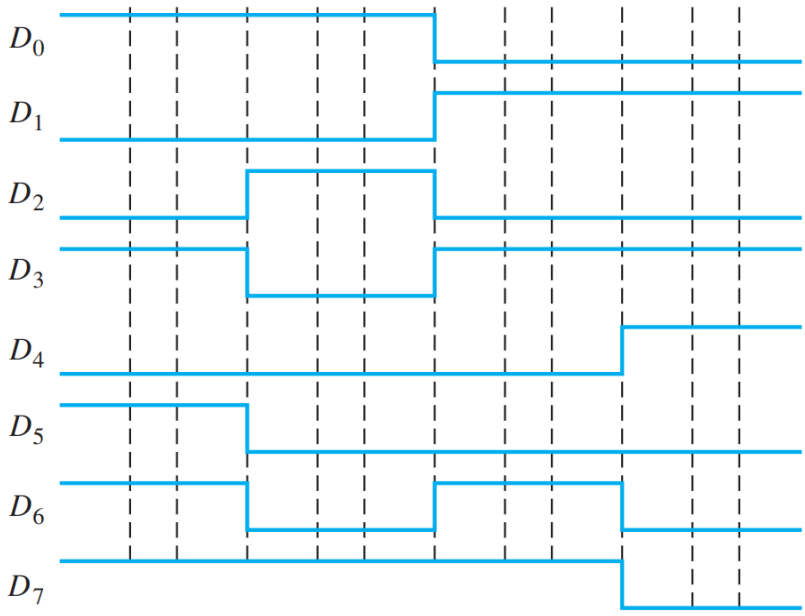


Figure 4