Homework 2
EET 242
Sequential Circuits and Applications

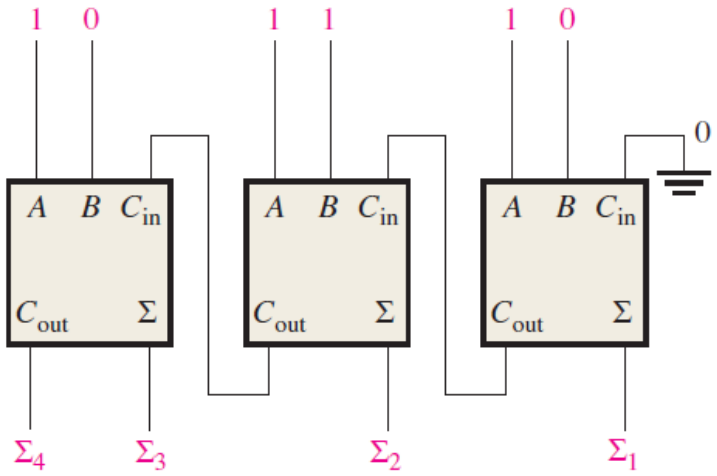
INSTRUCTIONS: The homework solution can either be typed in word or handwritten. However, convert the word or scanned (handwritten) document to PDF and submit to blackboard.

1.For the full adder, determine the outputs for each of the following inputs:

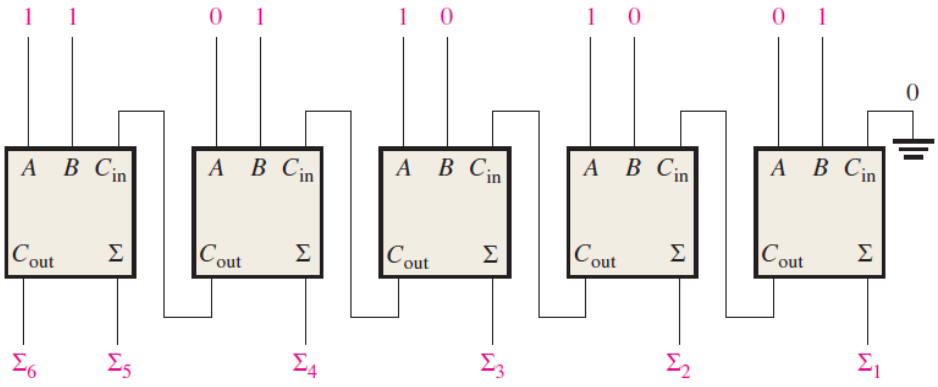
(a) A = 0, B = 1, Cin = 0

(b) A = 1, B = 0, Cin = 1

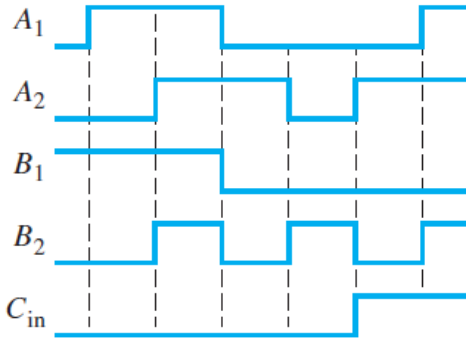
2.For the parallel adder, determine the complete sum by analysis of the logical operation of the circuit.



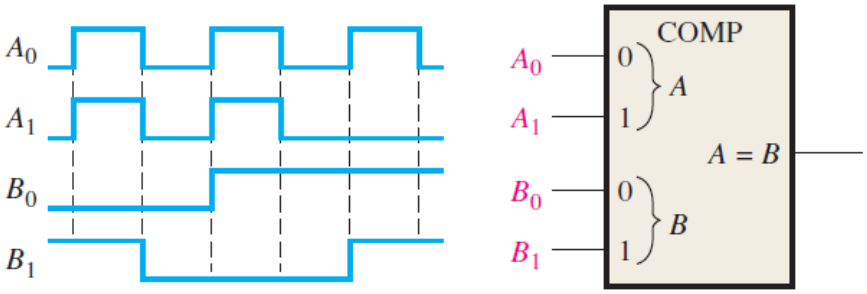
3.For the parallel adder, determine the complete sum by analysis of the logical operation of the circuit.



4. The input waveforms are applied to a 2-bit adder. Determine the waveforms for the sum and the output carry in relation to the inputs by constructing a timing diagram.



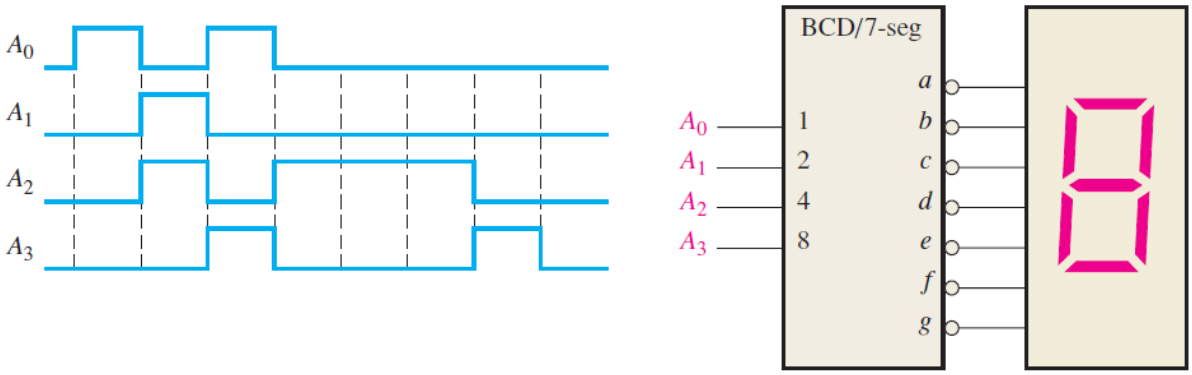
5. The waveforms are applied to the comparator as shown. Determine the output ($A = B$) waveform.



6. For each set of binary numbers, determine the output states for the comparator:

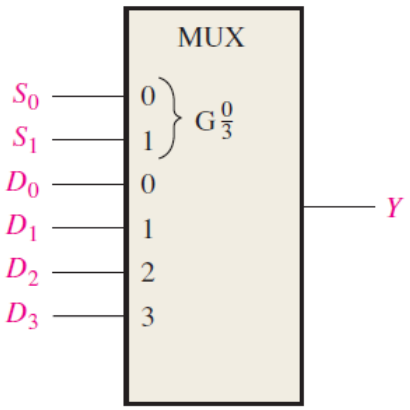
$A3A2A1A0 = 1101$
$B3B2B1B0 = 1101$

7. A 7-segment decoder/driver drives the display. If the waveforms are applied as indicated, determine the sequence of digits that appears on the display.



8. Convert each of the following decimal numbers to BCD and then to binary. (a) 12 (b) 23

9. For the multiplexer, determine the output for the following input states: *D*0 = 1, *D*1 = 0, *D*2 = 0, *D*3 = 1, *S*0 = 0, *S*1 = 1.



10. If the data-select inputs to the multiplexer are sequenced as shown by the waveforms in Figure (left), determine the output waveform.