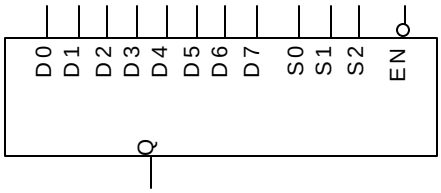
Name _____ Box _____ Due date: Monday April 2

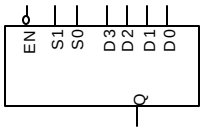
ECE130 Homework #10 Spring 2001

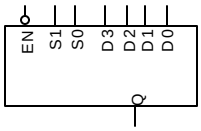
(Multiplexers)

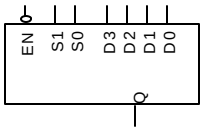
1 Problem 11 on page 58 of Dr. Eccles' book. Implement $Z(A,B,C)=\Sigma(1,2,3,5,6)$ using an 8-to-1 multiplexer.

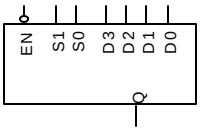


2 (Modified from Problem 9 on page 58 of Dr. Eccles' book). Create a 16-to-1 multiplexer using 4 4-to-1 multiplexers and as little other gates as possible. The output of the 4-to-1 multiplexer is "1" when it is disabled.









3 Implement Z(A,B,C,D), where Z=1 if the binary number AB≥CD, with an 8-input multiplexer 74LS151 and inverters if necessary.

Simulate your design with LogicWorks 4.

Make sure to use binary switches to implement "0" and "1".

Attach the circuit schematic with all delays visible and one segment of the waveforms showing all input combinations.

Mark the truth table on the waveforms.

ABCD	Z	Z(D)
0000		
0001		
0010		
0011		
0100		
0101		
0110		
0111		
1000		
1001		
1010		
1011		
1100		
1101		
1110		
1111		