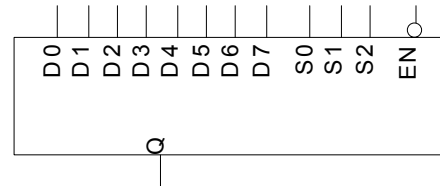
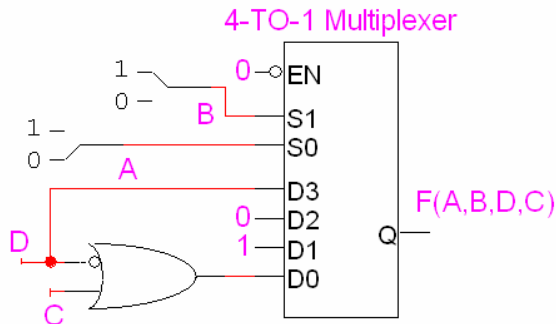


- 1 (Modified Problem 11 on page 58 of Dr. Eccles' book) Implement  $Z(A,B,C)=\Pi(0,2,3,7)$  using an 8-to-1 multiplexer.



- 2 Fill in K-map for function  $F(A,B,C,D)$  that is implemented by a 4-to-1 multiplexer and gates as in the following schematic.



	00	01	11	10
00				
01				
11				
10				

- 3 (Multiplexer) Implement the 2-bit unsigned-number half subtractor Homework #9 with 74LS151 multiplexer chips and necessary gates. The four inputs are  $X=X_1X_0$  and  $Y=Y_1Y_0$ . The outputs are two-bit difference  $D=D_1D_0$  and one-bit borrow  $B$ .  $X_1X_0 - Y_1Y_0 = D_1D_0 \dots B$ . Borrow occurs when  $X < Y$ .

Simulate your design with LogicWorks 4. Submit both your circuit schematic and annotated waveforms with zero gate delay.

$X_1X_0Y_1Y_0$	$D_1$	$D_0$	Borrow
0000			
0001			
0010			
0011			
0100			
0101			
0110			
0111			
1000			
1001			
1010			
1011			
1100			
1101			
1110			
1111			