

- A. Fill-in the truth table for the below function.

[1 pt]

$$F(X, Y) = (X\bar{Y}) Y \oplus X$$

X	Y	F
0	0	
0	1	
1	0	
1	1	

- B. Determine the SoM expression for the Boolean function F in below. Show your work.

$$F(X, Y, Z) = (Z\bar{Y} + X)(X + \bar{Y}Z)$$

[1pt]

- C. Determine the PoM expression for the Boolean function F in below. Show your work.

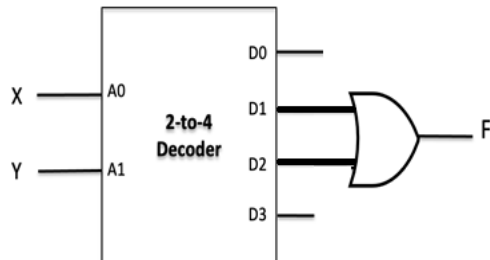
$$F(A, B, C) = B \odot (A\bar{C})$$

[1 pt]

D. Given the below circuit, write a **simplified** expression of F ?

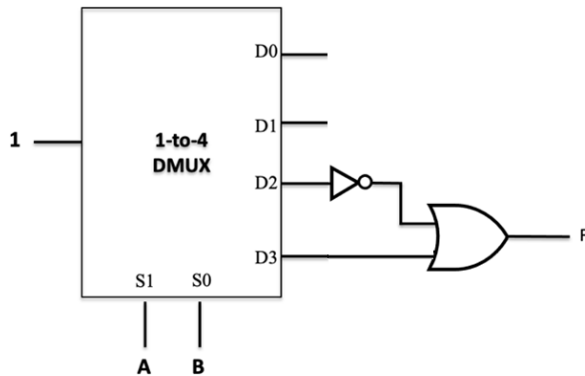
[1 pt]

$F(X, Y) =$ _____



E. Fill-in the truth table for the below circuit.

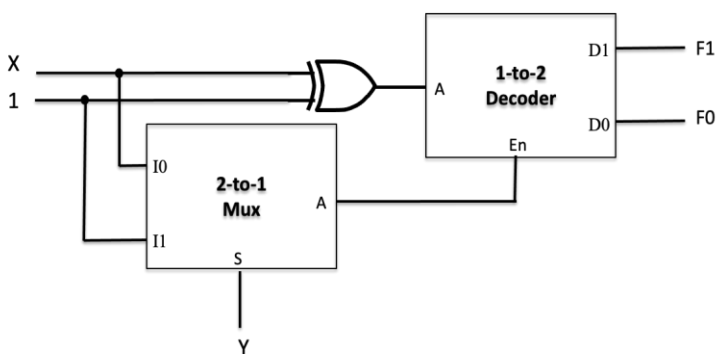
[1 pt]



A	B	F
0	0	
0	1	
1	0	
1	1	

F. Fill-in the truth table for the below circuit.

[2 pts]



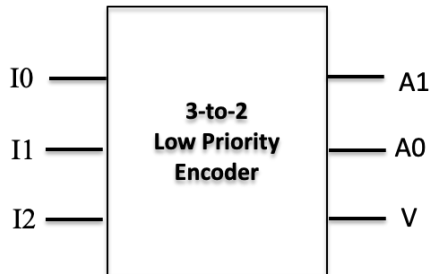
X	Y	F1	F0
0	0		
0	1		
1	0		
1	1		

G. Write down the equations of A1 and A0 in the below encoder circuit.

[1 pt]

A1 = _____

A0 = _____



H. If $N = 10101$ in binary, then what is N in decimal, assuming we have signed-magnitude representation? [0.5 pts]

$N =$ _____

I. If $N = 11100$ in binary, then what is N in decimal, assuming we have signed 2s complement representation? [0.5 pts]

$N =$ _____

J. If $N = +88$ in decimal, then what is N in binary, assuming we have 8-bit signed 2s complement representation? [0.5 pts]

$N =$ _____

K. If $N = -88$ in decimal, then what is N in binary, assuming we have 8-bit signed-magnitude representation? [0.5 pts]

$N =$ _____