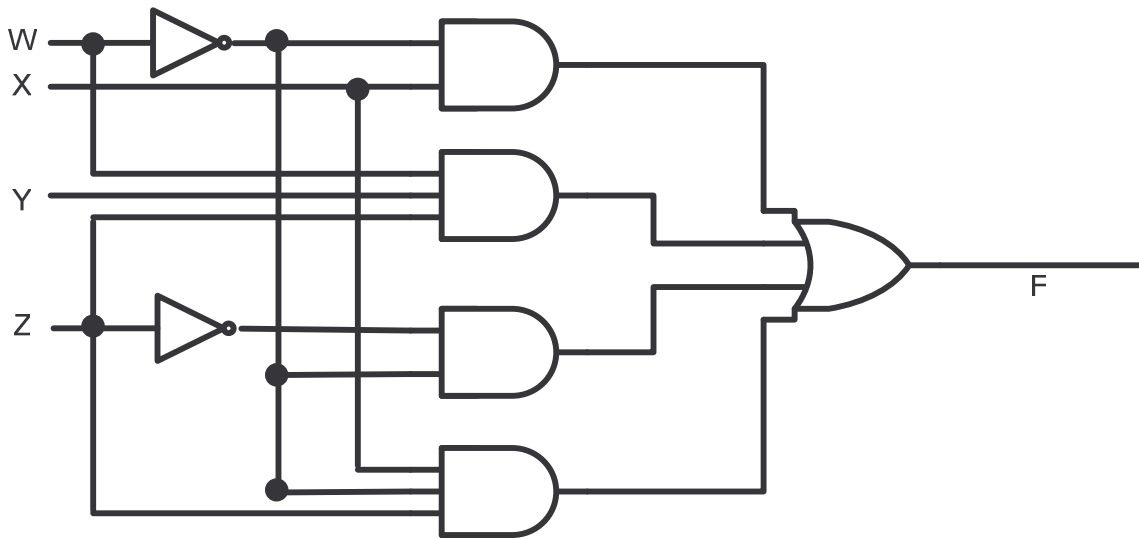


UNC Charlotte - ECGR2181 - Homework #5 - Due 2/21/06

- 1) Convert -500_{10} to hexadecimal (16 bits two's complement notation) by hand. Show your work. 1pt.
- 2) Show the binary bit stream if I send the eight-bit data $0x45$ via RS-232c communications with the appropriate start bits, one stop bit, and even parity. 1pt
- 3) What is the range of numbers that can be represented by 12 bits if we are representing two's complement integers? (Express as the formula and as decimal numbers) 1pt
- 4) Perform the operation $0x5F2$ divided by $0x24$. Show your result in binary (hint: Perform the division in binary). Show your work. 2pt
- 5) Draw a Transistor-Level Schematic Diagram of a three-input OR Gate, similar to what was done in the homework assignment. 3pts.
- 6) Combinational Circuit Analysis. Write a logic expression for the output F of the circuit below as a function of the circuit inputs (W, X, Y, and Z). Derive the expression directly from the structure of the circuit; do not simplify. 2pts.



- 7) Complete the Truth Table for the following function: $F = \Sigma A,B,C(0,1,5,7)$ and give the Canonical Sum representation. 2pts.

Row	A	B	C	F	Minterm
0	0	0	0		
1	0	0	1		
2	0	1	0		
3	0	1	1		
4	1	0	0		
5	1	0	1		
6	1	1	0		
7	1	1	1		

- 8) Combinational Circuit Minimization. Using a Karnaugh map, find a minimal sum of products expression for the function from the previous question: $F = \Sigma A,B,C(0,1,5,7)$. Show all of your work (draw and label the entire table). 3pts.
- 9) Combinational Circuit Minimization. Fill in the Karnaugh map and find a minimal sum of products expression for the function: 5pts.
 $F = \Sigma W,X,Y,Z(0,2,8,9,10,12,16,22,24,25,26,28,29) + d(4,5,6,7,13,18,20)$.

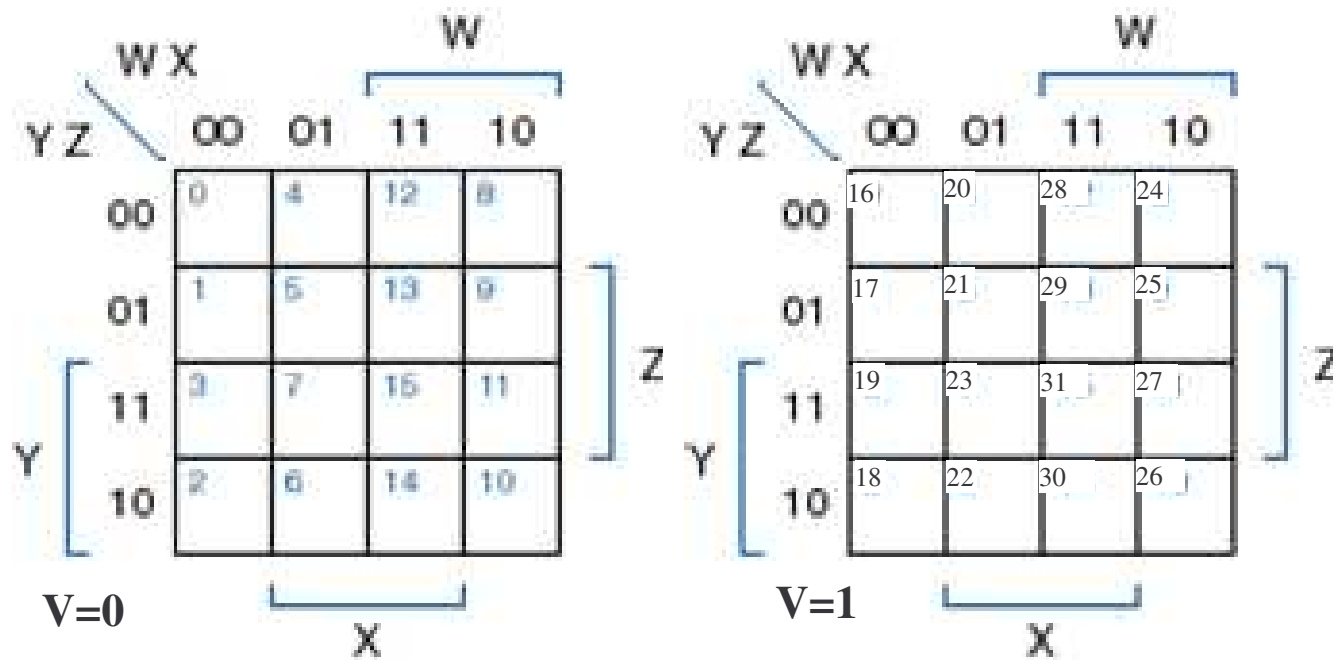
Name: _____

#7 Answer

Row	A	B	C	F	Minterm
0	0	0	0		
1	0	0	1		
2	0	1	0		
3	0	1	1		
4	1	0	0		
5	1	0	1		
6	1	1	0		
7	1	1	1		

F = _____

#9 Answer



F = _____