

All the normal rules apply: Due the week after test, work on separate paper, start early, show your work, label everything (especially on graphs -including axes, time/voltage divisions, function plots, etc.), specify units, circle answers.

1. Convert the following binary numbers to decimal:
 - a. 11001011
 - b. 1011.101

2. Convert the following decimal numbers to binary (hint: for part c, convert the decimal to a fraction first, then a sum of fractions whose denominators are powers of two):
 - a. 12
 - b. 43
 - c. 22.5625

3. Add the following binary numbers:
 - a. 1011+010
 - b. 1011+011

4. Convert the following binary numbers to hexadecimal:
 - a. 10111101
 - b. 1010110

5. From the given truth table below:
 - a. Write a Boolean equation in canonical form for the output F in terms of the inputs A, B, C.
 - b. Draw a simple logic diagram for your equation from part a using 2-input AND gates, OR gates, and NOT gates (inverters).

A	B	C	F
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	1

6. For the simple logic diagram below:
- Write a Boolean equation for the output F in terms of the inputs A, B, C.
 - Draw a truth table for the equation from part a.
 - Write the equation for F in canonical form.
 - You have now derived two equations that define the same function F. Which is simpler, a or c? Is there one even simpler than that which still accurately defines F?. Think through what it represents and try to express this function in a third way, simpler than the two we already have. Explain your logic.

