Problem Set:

Question 1

Complete the number conversions indicated. Note that all binary numbers are two's complement representations.

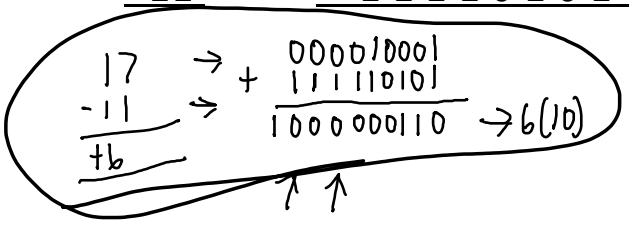
-19_D = 1110110 $_B$ $\quad\quad$ 10011010_B = -102 $_D$

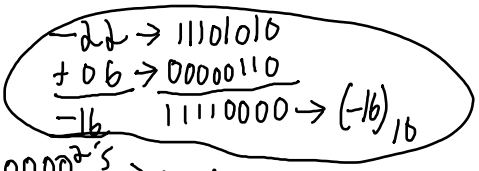
10000000_B = -128 $_D$ $\quad\quad$ -101_D = 1001011 $_B$

Question 2

Complete the two 2's complement arithmetic problems below assuming that all operations use an adder. Showing both the decimal and binary numbers in each case.

17	0 0 0 1 0 0 0 1	-22	1 1 1 0 1 0 1 0
- 11	+ 1 1 1 1 0 1 0 1	+ 6	+ 0 0 0 0 0 1 1 0



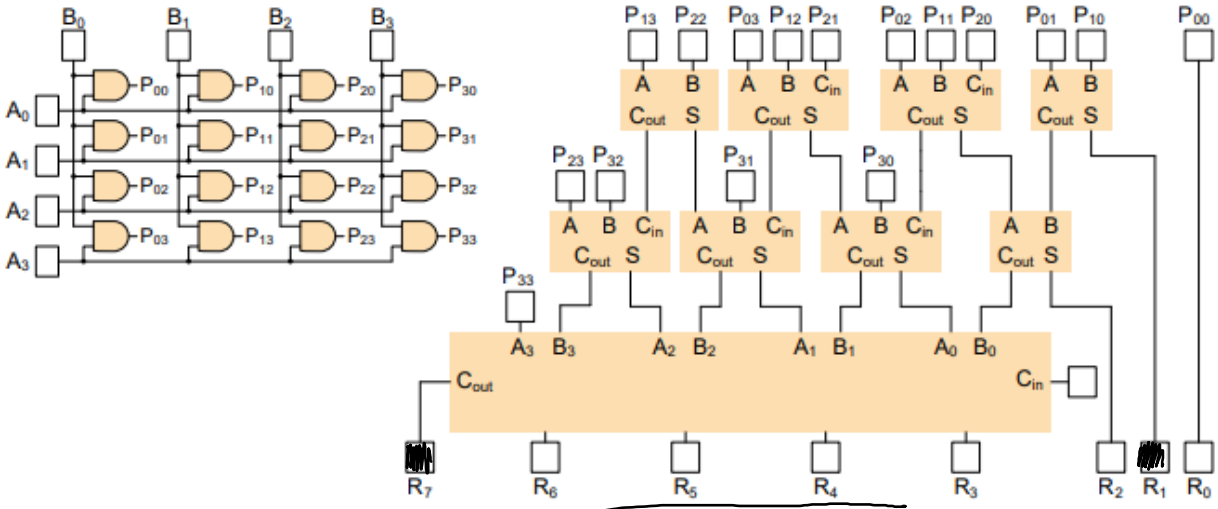


$11110000^{2's} \rightarrow 00010000 = (16)$

$(11110000)^{2's} (-16)_{10}$

Question 3

Fill in the squares below to show all signal values when A = “1101” and B = “1010” are multiplied.



multiplying we get 01000001

R0 R1 R2 R3 R4 R5 R6 R7

0	1	0	0	0	0	0	1

R7 → MSB , R0 → LSB