CSCI 2150 - Binary Representations Homework

Name: $\qquad$

1. Fill in the blank cells of the table below with the correct numeric format. For cells representing binary values, only 8-bit values are allowed! If a value for a cell is invalid or cannot be represented in that format, write "X".

| Decimal | 2's complement <br> binary | Signed magnitude <br> binary | Unsigned binary |
| :---: | :---: | :---: | :---: |
|  | $\mathbf{0 1 1 0 0 1 0 1}$ |  |  |
|  |  | $\mathbf{1 0 0 0 1 1 0 1}$ |  |
| $\mathbf{1 3 0}$ |  |  | $\mathbf{0 1 1 0 1 1 0 1}$ |

2. What is the most negative value that can be represented using 10 -bit 2 's complement representation?
3. Convert $101010101101011111110_{2}$ to hexadecimal.
4. Convert the binary value 101.1001 to decimal. (Note the binary point!)
5. Convert the 32-bit floating-point number 00111101001010100000000000000000 to its binary exponential format, e.g., $1.1010110 \times 2^{-12}$, (which, by the way, is not even close to the right answer).
