1. (a) (2 points) For the following four numbers given in decimal or hexadecimal notation, write the corresponding binary number using the indicated format.

$(-5)_{10}$ using six-bit sign magnitude: $(10\,0101)_2$

$(38)_{10}$ using six-bit unsigned: $(10\,0110)_2$

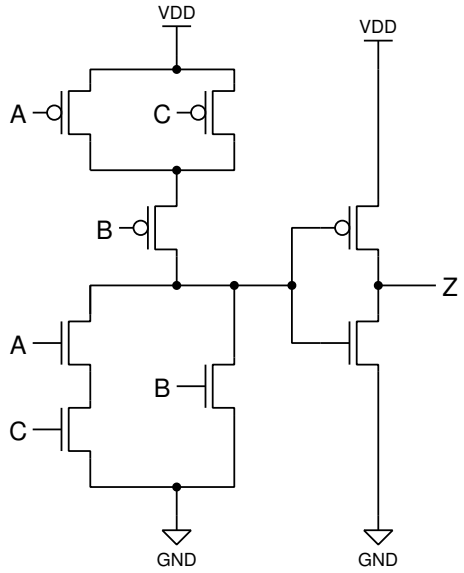
$(-28)_{10}$ using six-bit two's complement: $(10\,0100)_2$

Hexadecimal $(2C)_{16}$ using six-bit unsigned: $(10\,1100)_2$

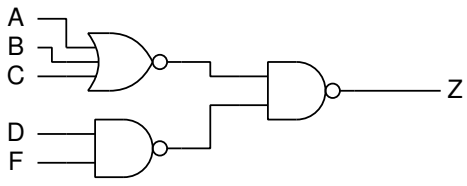
(b) (2 points) Consider the transistor level schematic below. What is the output going to be when:

A=1, B=0, C=1 **Z = 1**

A=0, B=1, C=1 **Z = 1**



(c) (1 point) Find a simplified Boolean function realized by the following circuit. (*Hint: use bubble pushing to simplify the circuit*)



Solution: Z = (A + B + C) + (DF)