Quiz 3, CSCIU 210, Fall 2018 **Name: _____Key_____**

Instructions: You must show your work and put your final answers in the blanks. If you round a numerical answer, **you must give at least 3 significant digits**.

Q1.

a. Perform $01110011_2+01000000_2$ and detect if overflow happens

Answer: For Signed number: Overflow, for unsigned number: No Overflow

b. Perform $11000011_2+01000000_2$ and detect if overflow happens

Answer: No Overflow

$Final\ Answer =$ **(a)___ Overflow/No Overflow_____, (b)_ No Overflow _____**

Q2. Determine whether the Boolean functions [$F = (a + b)^{/} . a$] and $G = a + b^{/}$ are equivalent, using: (a) algebraic manipulation, and (b) truth table.

Solution:

a) Convert the sum of minterms form:

$$F = (a + b)^{/} . a$$
$$F = a^{/}b^{/}a \ \ Using\ Demorgan^{'}slaw$$
$$F = 0$$

AND,

$$G = a + b^{/}$$
$$G = a(b + b^{/}) + b(a + a^{/})$$
$$G = ab + ab^{/} + a^{/}b^{/}$$

So, they are not equivalent

b)

a	**b**	**F**	**a**	**b**	**G**
0	0	**0**	0	0	**1**
0	1	**0**	0	1	**0**
1	0	**0**	1	0	**1**
1	1	**0**	1	1	**1**

So, they are not equivalent

$Final\ Answer =$ **_They are not equivalent_**

Quiz 3, CSCIU 210, Fall 2018 **Name: _____Key_____**

Instructions: You must show your work and put your final answers in the blanks. If you round a numerical answer, **you must give at least 3 significant digits**.

Q1.

a. Perform 01110011_2+01000000_2 and detect if overflow happens

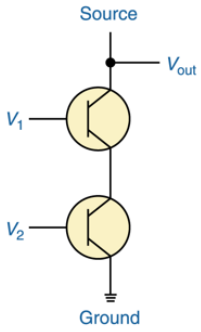
Answer: For Signed number: Overflow, for unsigned number: No Overflow

b. Perform 11000011_2+01000000_2 and detect if overflow happens

Answer: No Overflow

$Final\ Answer =$ **(a)___ Overflow/No Overflow_____, (b)_ No Overflow _____**

Q2. a. Draw the transistor circuit for NAND gate.



b. Find the inverse of the following function, $F = abc + a'b$.

Using DeMorgan's Law

$$F' = b' + ac'$$

$F' = b' + ac'$

$Final\ Answer =$ **(b)**_____