03/04/2022 Quiz 5 DM

1)

• float: $-1^{sign} \cdot 2^{exponent-127} \cdot 1.m$

a) sign = 0, exponent = 132, m = 42/32 = 1.3125

0 | 10000100 | 01010000000000000000000

42_{10} = 1.01010

b) -9_{10} => 1001

sign = 1, exponent = 130

1 | 10000010 | 00100000000000000000000

c) $10E90000_{16}$ => 10E9 0000

10149 0000

=> 0 | 1000 0100 | 1101 0010 0000 0000 0000 0000

• Exponent = 33

• Sign = 0

• m = 110 1001 0000 0000 0000 0000

=> $(-1)^0 \cdot 2^{33-127} \cdot 1.1101001$

=> $1 \cdot 2^{-94} \cdot (1 + 1/2 + 1/4 + 1/16 + 1/128)$

=> $2^{-94} \cdot (1 + 0.5 + 0.25 + 0.0625 + 0.0078125)$

=> 1.75 + 0.0625 => 1.8125 + 0.0078125

=> $1.8203125 \cdot 2^{-94}$

=> $\frac{1.8203125}{2^{94}}$

• 2^{-1} 2^{-2} 2^{-3} 2^{-4} 2^{-5} 2^{-6}

1/2 1/4 1/8 1/16 1/32 1/64

=> 2^{-7} * add this to cheat sheet w/ corresponding decimal values

1/128

2)

a) $F(a,b,c) = ab + a\bar{c} + ab\bar{c}$

(b, $\bar{c}$, $b\bar{c}$)

$\bar{a} = 0$

$a = b + \bar{c} + b\bar{c}$ => $b + \bar{c}$

=> $\bar{a}(0) + a(b + \bar{c})$

=>

1 $\bar{c}$ 0

b) $F(a,b,c) = ab + a\bar{c} + ab\bar{c}$

$\Rightarrow \bar{a}\bar{b} = 0$

$\bar{a}b = 0$

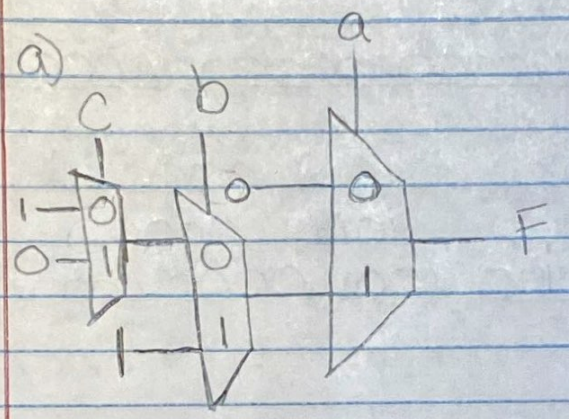
$a\bar{b} = \bar{c}$

$ab = 1 + \bar{c} + \bar{c}$

$\Rightarrow \bar{a}\bar{b}(0) + \bar{a}b(0) + a\bar{b}(\bar{c}) + ab(1)$

b	c	F	
0	0	1	
0	1	0	$\bar{c}$
1	0	1	
1	1	1	b

a)



b)