

CSF 220 HW 4

1.

2. a) $-18.3125 \rightarrow -(10010)0101 \rightarrow 1.00100101 \times 2^4$ $127+4=131$
 $.3125 \times 2 = .625$ 10000011
 $.625 \times 2 = 1.25$
 $.25 \times 2 = 0.5$
 $.5 \times 2 = 1.0$

11000001100100101000000000000000
C1928000 000

b) $11.25 \rightarrow 1011.01 \rightarrow 1.01101 \times 2^3$ $127+3=130 \rightarrow$
 $.25 \times 2 = .5$ 10000010
 $.5 \times 2 = 1.0$

0 100 000 10 011 0100 0000 000 0 0000 000

41340000

c) $0.078125 \rightarrow 0.000101 \rightarrow 1.01 \times 2^{-4}$ $127-4 = 123 \rightarrow$
 $.078125 \times 2 = 0.15625$ 01111011
 $.15625 \times 2 = 0.3125$
 $.3125 \times 2 = 0.625$ $00111101101000000000000000000000$
 $.625 \times 2 = 1.25$ $13DA000000$
 $.25 \times 2 = 0.5$
 $.5 \times 2 = 1.0$ $128-127=1$

3. a) $(0123456 + 81C564B7) \rightarrow (1100000000100100011010001010110)$
 $-(1.0010010001101000101011) \times 2^1$
 $= -2.28444433212$
 $(100000111000101011001001011011)$
 $-(1.1000101011001001011011) \times 2^{-124}$
 $= -7.25100896857 \times 10^{(-52)} \in 0123456 + 81C564B7$
 \downarrow
 negligible $= \boxed{0123456}$

$$163 - 127 = 36$$

$$b) D0B10361 + D1B43203 \rightarrow \textcircled{11010001101101000011001000000011}$$

$$\downarrow, 161 - 127 = 34$$

$$\rightarrow -96741646336$$

$$\textcircled{11010000101100010000001100000001}$$

$$-(1.01100010000001100000001) \times 2^{34} = -23758112768$$

$$-96741646336 + -23758112768 = -120499759104$$

$$\boxed{-D1E672C3}$$

$$4. a) 3F860000 + 66800000$$

$$\downarrow 2$$

$$\rightarrow 1.77549 \times 10^{(62)} \rightarrow \text{negligible}$$

$$= \boxed{3F8000000}$$

$$b) 3F8000000 + 33801000$$

$$\downarrow$$

$$\downarrow$$

$$2$$

$$+$$

$$5.96337 \times 10^{-8}$$

$$= 1.00000005963$$

$$= \boxed{3F800001}$$