

Student Name: Obada Tahayna

Assignment 2

Student Number: 119 1319

Section: 1 (8L)

Question 1:

①  $(73)_8 - (32)_4 = (\quad)_{10}$

•  $(73)_8 \rightarrow (00111011)_2$

•  $(32)_4 \rightarrow (00001110)_2$

•  $\begin{array}{r} 1's \quad 11110001 \\ 2's \quad 1110010 \end{array}$

•  $\begin{array}{r} 00111011 \\ 11110010^+ \\ \hline \boxed{00101101} \end{array}$

•  $(00101101)_2 \rightarrow (45)_{10}$

②  $(2C)_{16} - (01101110)_2 = (\quad)_{10}$

•  $(2C)_{16} \rightarrow (00101100)_2$

•  $01101110$

$1's \quad 10010001$

$2's \quad 10010010$

•  $\begin{array}{r} 00101100 \\ 10010010^+ \\ \hline 10111110 \end{array}$

$1's \quad 01000001$

$2's \quad 01000010$

$\rightarrow \rightarrow (26)_{10}$

Question 1:

③  $(00010101)_2 - (46)_{10}$

•  $(46)_{10} \rightarrow (00101110)_2$

• 1's  $11010001$

2's  $11010010$

• 
$$\begin{array}{r} 00010101 \\ 11010010 \\ \hline 11100111 \end{array} +$$

• 1's  $00011000$

2's  $00011001$

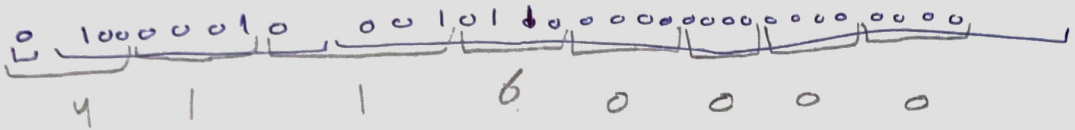
•  $\rightarrow (-25)_{10}$

Question 2:

① •  $(9.375)_{10} \rightarrow (1001.011)_2$

•  $\rightarrow 1.00101 \times 2^3$

• Exponent =  $127 + \text{power} = (130)_{10} = (10000010)_2$



Memory

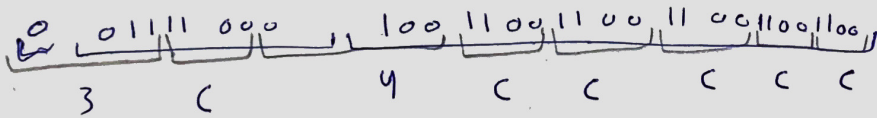
00
00
10
41

② •  $(0.0125)_{10} \rightarrow (0.0000011)_2$

•  $\rightarrow 1.100110011 \times 2^{-7}$

• Exponent =  $127 - 7 = (120)_{10} = (01111000)_2$

- 0.0125 x 2 = 0.025
- 0.025 x 2 = 0.05
- 0.05 x 2 = 0.1
- 0.1 x 2 = 0.2
- 0.2 x 2 = 0.4
- 0.4 x 2 = 0.8
- 0.8 x 2 = 1.6
- 0.6 x 2 = 1.2
- 0.2 x 2 = 0.4



Memory

CC
CC
4C
3C

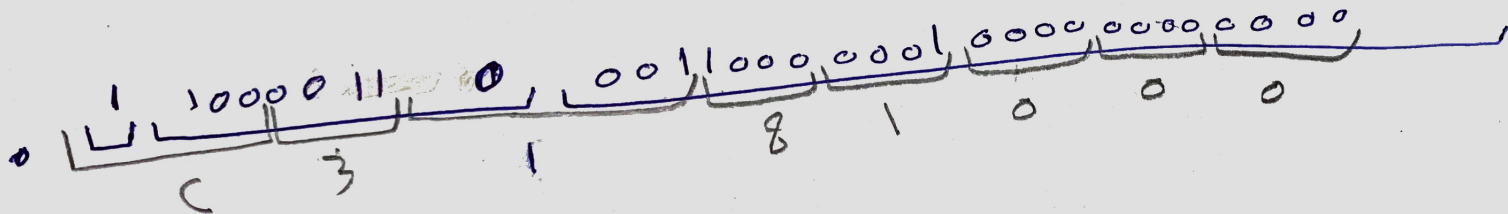
Question 2:

③ •  $(-152.0625)_{10} \rightarrow (10011000.0001)_2$  ~~10011000.0001~~

• ~~10011000.0001~~  $\rightarrow 1.001100000001 \times 2^7$

•  $\text{Expo} = 127 + 7 = (134)_{10} = (10000110)_2$

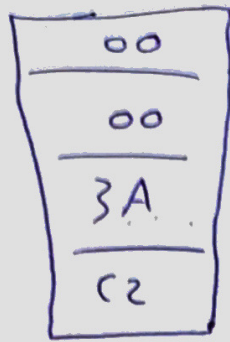
$0.0625 \times 2 = 0.125$
$0.125 \times 2 = 0.25$
$0.25 \times 2 = 0.5$
$0.5 \times 2 = 1$



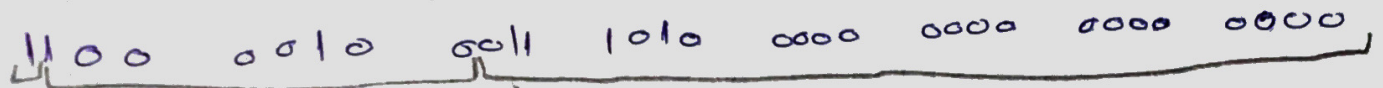
• Memory

00
10
18
(3)

Question 3:



C2 3A 0000



Sign Bit = 1 ⊖

$$\text{Exponent} = (1000010)_2 = (132)_{10} \Rightarrow \text{Power} = 132 - 127 = 5$$

$$1.0111010 \times 2^5 = (101110.1)_2$$

$$= 2^5 + 2^3 + 2^2 + 2^1 + 2^{-1} = (46.5)_{10}$$

$$\Rightarrow (-46.5)_{10}$$

Question 4:

1)  $(-177)_{10}$

•  $(177)_{10} \rightarrow (10110001)_2$

• 1's

$01001110$

2's

$\frac{0100}{4} \frac{1111}{F}$

Memory 4F

2) AL-Quads

A  $(65)_{10} \rightarrow (11000001)_2$

C1

L  $(76)_{10} \rightarrow (01001100)_2$

4C

-  $(45)_{10} \rightarrow (10101101)_2$

AD

Q  $(81)_{10} \rightarrow (01010001)_2$

51

u  $(117)_{10} \rightarrow (01110101)_2$

75

d  $(100)_{10} \rightarrow (01100100)_2$

64

s  $(115)_{10} \rightarrow (01110011)_2$

73

Memory

C1
4C
AD
51
75
64
73