

MIDTERM CONVERSIONS

PART A & B

① $2.875_{10} \rightarrow \underline{\hspace{2cm}}_{16}$

$$2_{10} = 2_{16}, \quad 0.875_{10} = 14_{16} = E_{16}$$
$$= \boxed{2.E_{16}}$$

$2.E_{16} \rightarrow \underline{\hspace{2cm}}_2$

$$\boxed{0010.1110_2}$$

$\underline{0010}. \underline{1110}_2 \rightarrow \underline{\hspace{2cm}}_8$

$$= \boxed{010.111_8}$$

negative

$$2.875_{10} = \boxed{-2.875_{10}}$$

$$2.E_{16} = \boxed{-2.E_{16}}$$

one's comp 0010.1110_2
 1101.0001
2's comp $0010.1111 + 1 = \boxed{0010.1111_2}$

② ~~conversion~~

$0.1796875_{10} \rightarrow \underline{\hspace{2cm}}_{16}$

$$0.1796875_{10} \times 16 = \boxed{2.875_{16}}$$

$$0.875 \times 16 = \boxed{14}$$

$$\boxed{0.2E_{16}}$$

$$0.2E_{16} \rightarrow \text{_____}_2$$

$$0. \quad \quad \quad 2 \quad \quad \quad E$$

$$0010 \quad 1110$$

$$= \boxed{0.00101110_2}$$

$$0. \underline{0010} \underline{1110}_2 \rightarrow \text{_____}_8$$

$$0. \quad 1 \quad 3 \quad 4 = \boxed{0.134_8}$$

negative

$$0.2E = \boxed{-0.2E}$$

$$0.00101110_2$$

$$= 0.00101110$$

$$\begin{matrix} \text{ones} \\ \text{comp} \end{matrix} 1.11010001 + 1$$

$$\begin{matrix} 2^{\text{ys}} \\ \text{comp} \end{matrix} 0.00101111$$

$$= \boxed{0.00101111_2}$$

NASA FORMAT

PART C:

① 59999901

0.101,1001|1001,1001|1001,1001|0000,0001

$$\boxed{0.1 \times 2^{-15}}$$

2's
comp

↓

$$\begin{array}{r} 0001 \\ 1110 \\ \hline 1111 \\ = 15 \end{array}$$

② 59999902

0.101,1001|1001,1001|1001,1001|0000,0010

$$= \boxed{0.1 \times 2^{-14}}$$

2's
comp

↓

$$\begin{array}{r} 0010 \\ 1101 \\ \hline 1110 \\ = 14 \end{array}$$

③ A66667FE

1010,0110,0110,0110,0110,0111|1111,1110

1001
repeats

$$= \boxed{1.01 \times 2^{-15}}$$

2's
comp

↓

$$\begin{array}{r} 1110 \\ 0001 \\ \hline 1111 \\ = 15 \end{array}$$