

Exercise 7

D/P: 29.08.2002

$$① 2002_{10} = 1111010010_2$$

$$1001_{10} = 1111101001_2$$

2002	1001	500	250	125	62	31	15	7	3	1
0	1	0	0	1	0	1	1	1	1	1

$$\begin{array}{r} 1111010010 \\ 010010 \end{array}$$

$$\oplus \begin{array}{r} 1111010010 \\ 01111101001 \\ \hline 10000111011 \end{array}$$

$$\begin{array}{r} 10000111011 \\ 012345678910 \end{array}$$

$$0: 1$$

$$1: 1 \oplus 0 = 1$$

$$2: 1 \oplus 0 \oplus 0 = 1$$

$$3: 1 \oplus 0 \oplus 0 \oplus 0 = 1$$

$$4: 1 \oplus 0 \oplus 0 \oplus 0 \oplus 0 = 1$$

$$5: 1 \oplus 0 \oplus 0 \oplus 0 \oplus 0 \oplus 0 = 0$$

$$6: 1 + 0 + 0 + 0 + 0 + 1 + 1 = 1$$

$$7: 1 + 0 + 0 + 0 + 0 + 1 + 1 + 1 = 0$$

$$8: 1 + 0 + 0 + 0 + 0 + 1 + 1 + 1 + 0 = 0$$

$$9: 1 + 0 + 0 + 0 + 0 + 1 + 1 + 1 + 0 + 1 = 1$$

$$10: 1 + 0 + 0 + 0 + 0 + 1 + 1 + 1 + 0 + 1 + 1 = 0$$

$$1111010010_2 = 2002_{10}$$

$$\text{OSB: } 2002 \leftrightarrow 10000111011$$

② 583

2.1) $583_{10} = 100100011_2$

$291_{10} = 100100011_2$

583	291	145	72	36	18	9	4	2	1
1	1	1	0	0	0	1	0	0	1

$$\begin{array}{r} 100100011 \\ 010010001 \\ \hline 1101100100_2 \end{array}$$

1101100100

2.2) 1101100100
0 1 2 3 4 5 6 7 8 9

0: 1

1: $1+1=0$

2: $1+1+0=0$

3: $1+1+0+1=1$

4: $1+1+0+1+1=0$

5: $1+1+0+1+1+0=0$

6: 0

7: $1+1+0+1+1+0+0+1=1$

8: 1

9: 1

$100100011_2 = 583_{10}$

① TB: $583 \leftrightarrow 1101100100$

③ $37_{10} = 10010_2$

$18_{10} = 10010_2$

37	18	9	4	2	1
1	0	1	0	0	1

$$\begin{array}{r} 100101 \\ 010010 \\ \hline 110111 \end{array}$$

③.2) 110111
0 1 2 3 4 5

$$0: 1$$

$$1: 1+1=0$$

$$2: 1+1+0=0$$

$$3: 1+1+0+1=1$$

$$4: 1+1+0+1=0$$

$$5: 1+1+0+1+1+1=1$$

$$100101_2 \rightarrow 37_{10}$$

$$\text{OFB: } 37 \leftrightarrow 110111$$

$$\textcircled{4} 216_{10} = 11011000_2$$

$$108_{10} = 1101100_2$$

216	108	54	27	13	6	3	1
0	0	0	1	1	0	1	1

$$4.1) \oplus \begin{array}{r} 11011000 \\ 01101100 \\ \hline 10110100 \end{array}$$

$$4.2) \begin{array}{r} 10110100 \\ 01234567 \end{array}$$

$$0: 1$$

$$1: 1$$

$$2: 0$$

$$3: 1$$

$$4: 1$$

$$5: 0$$

$$6: 0$$

$$7: 0$$

$$11011000_2 \rightarrow 216_{10}$$

$$\text{OFB: } 216 \leftrightarrow 10110100$$