

Assignment - 1

1

0 dec → bin

$$\begin{array}{r}
 2 | 72945 & 1 \\
 \underline{2} | 36472 & 0 \\
 2 | 18236 & 0 \\
 \underline{2} | 9118 & 0 \\
 2 | 4559 & 0 \\
 \underline{2} | 2279 & 1 \\
 2 | 1139 & 1 \\
 2 | 569 & 1 \\
 \underline{2} | 284 & 1 \\
 2 | 142 & 0 \\
 2 | 71 & 0 \\
 \underline{2} | 35 & 1 \\
 2 | 17 & 1 \\
 2 | 8 & 1 \\
 2 | 4 & 0 \\
 2 | 2 & 0 \\
 2 | 1 & 0 \\
 0 & 1
 \end{array}$$

⑪ dec → BCD

$$(72945)_{10} = (0111 \ 0010 \ 1001 \ 0100 \ 0101)_{BCD}$$

(iii) dec → Ex 5

(2995)₁₀

$$z = \begin{pmatrix} 1 & 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 0 & 1 \\ 1 & 0 & 0 & 1 & 1 \\ 1 & 0 & 1 & 0 & 0 \end{pmatrix}_{\text{Ex-5}}$$

$\text{bin} \neq \text{BCD} \neq \text{Ex-5}$

(Proved)

$$\therefore \text{bin} = (10001110011110001),$$

2

$$(2F8.BE)_{16} \rightarrow 2 \times 16^2 + F \times 16^1 + 8 \times 16^0 + B \times 16^{-1} + E \times 16^{-2}$$

$$= (760.74218)_{10}$$

$$\begin{array}{r}
 6 \overline{) 760} \\
 6 \overline{) 126} \\
 6 \overline{) 21} \\
 6 \overline{) 3} \\
 0
 \end{array}
 \quad
 \begin{array}{l}
 4 \leftarrow \text{LSB} \\
 0 \\
 3 \leftarrow \text{MSB}
 \end{array}$$

$$0.\overline{7}4128 \times 6 = 4.44\overline{7}68 \quad 4 \leftarrow \text{MSB}$$

$$0.44768 \times 6 = 2.68608$$

$$0.68608 \times 6 = 4.11648 \quad 4 \leftarrow \text{LSB}$$

$$6 \overline{)3} \quad 3$$

$$\therefore (760 \cdot 74218)_{10} = (3304 \cdot 424)_6$$

3

$$@ \quad 23 - (-15) = 23 + 15$$

~~15~~

$$\begin{array}{r}
 23 = 010111 \\
 + 15 = 001111 \\
 \hline
 38 = 100110
 \end{array}$$

overflow

~~25~~

$$\begin{array}{r}
 23 = 010111 \\
 + 15 = 001111 \\
 \hline
 38 = 100110
 \end{array}$$

overflow

⑥ $-89 = -(000001011001) = (111110100110)_{1s}$
 $= (111110100111)_{2s}$

~~15~~

$$\begin{array}{r}
 -89 = 111110100110 \\
 + 74 = 000001001010 \\
 \hline
 -15 = 11111110000
 \end{array}$$

no overflow

~~25~~

$$\begin{array}{r}
 -89 = 111110100111 \\
 + 74 = 000001001010 \\
 \hline
 -15 = 11111110001
 \end{array}$$

no overflow

4] $620_8) 56214306, (00064004$

$$\begin{array}{r}
 0 \\
 \hline
 56 \\
 0 \\
 \hline
 562 \\
 0 \\
 \hline
 5621 \\
 5250 \\
 \hline
 3414 \\
 3410 \\
 \hline
 43 \\
 0 \\
 \hline
 430 \\
 0 \\
 \hline
 4306 \\
 3410 \\
 \hline
 566
 \end{array}$$

\therefore Quotient = 64004
 Remainder = 566

5] Cake = $(1101)_2 = 13_{10}$

Balloons = $(24)_8 = 20_{10}$

Decor = $(1A)_{16} = 26_{10}$

Snacks = $(101)_2 = 5_{10} \times 5 = 25_{10}$

\therefore Total cost = $13 + 20 + 26 + 25 = 84_{10}$

$$\text{My money} = (100011)_2 = 35_{10}$$

$$\therefore \text{Deficit} = 84 - 35 = 49_{10}$$