

* ——— ○ ——— Problems ——— ○ ———

① Compute the following using BCD addition.

(i) $18 + 82$.

$$\begin{array}{r} 18 \\ + 82 \\ \hline 100 \end{array}$$

$$\begin{array}{r} \text{0001} \quad \text{1000} \\ + \text{1000} \quad \text{0010} \\ \hline \text{1010} \quad \text{1010} \rightarrow \text{Not valid} \\ \text{0110} \quad \text{0110} \\ \hline \text{10000} \quad \text{0000} \Rightarrow \boxed{100} \end{array}$$

(ii) $184 + 419$

$$\begin{array}{r} 184 \\ + 419 \\ \hline 603 \end{array}$$

$$\begin{array}{r} \text{0001} \quad \text{1000} \quad \text{0100} \\ \text{0100} \quad \text{0001} \quad \text{1001} \\ \hline \text{0111} \quad \text{1010} \quad \text{1101} \\ \text{0110} \quad \text{0110} \\ \hline \text{0110} \quad \text{0000} \quad \text{0011} \Rightarrow \boxed{603} \end{array}$$

② Convert Gray code 10101010111 to binary.

$$\begin{array}{cccccccccccc} 1 & 0 & 1 & 0 & 1 & 0 & 1 & 0 & 1 & 1 & 1 & 1 \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 1 & 1 & 0 & 0 & 1 & 1 & 0 & 0 & 1 & 0 & 1 & 1 \\ \Rightarrow 11001100101_2 \end{array}$$