

$$1. \quad 0 \times a1 = 1010 \quad 0001 = x^7 + x^5 + 1$$

$$0 \times 63 = 0110 \quad 0011 = x^6 + x^5 + x + 1$$

$$(x^7 + x^5 + 1)(x^6 + x^5 + x + 1)$$

$$= x^{13} + x^{12} + x^8 + x^7 + x^{11} + x^{10} + x^6 + x^5 + x^6 + x^5 + x + 1$$

$$= x^{13} + x^{12} + x^{11} + x^{10} + x^8 + x^7 + x + 1$$

$$= x^7 + x^6 + x^3 + x \pmod{m(x)}$$

$$= 11001010 = CA$$

$$x^5 + x^4 + x^3 + x^2 + x + 1$$

$$x^8 + x^4 + x^3 + x + 1 \quad \begin{array}{r} x^{13} + x^{12} + x^{11} + x^{10} + x^6 + x^7 + x + 1 \\ x^{13} + x^9 + x^8 + x^6 + x^5 \end{array}$$

$$\begin{array}{r} x^{12} + x^{11} + x^{10} + x^9 + x^7 + x^6 + x^5 + x + 1 \\ x^{12} + x^8 + x^7 + x^5 + x^4 \end{array}$$

$$\begin{array}{r} x^{11} + x^{10} + x^9 + x^8 + x^6 + x^4 + x + 1 \\ x^{11} + x^7 + x^6 + x^4 + x^3 \end{array}$$

$$\begin{array}{r} x^{10} + x^9 + x^8 + x^7 + x^3 + x + 1 \\ x^{10} + x^6 + x^5 + x^3 + x^2 \end{array}$$

$$\begin{array}{r} x^9 + x^8 + x^7 + x^6 + x^5 + x^2 + x + 1 \\ x^9 + x^5 + x^4 + x^2 + x \end{array}$$

$$x^8 + x^7 + x^6 + x^4 + 1$$

$$x^8 + x^4 + x^3 + x + 1$$

$$x^7 + x^6 + x^3 + x$$