

$$N \text{ XOR } 23 = 45$$

Property

$$A \text{ XOR } B \text{ XOR } B = A$$

$$\therefore N \text{ XOR } 23 \text{ XOR } 23 = N$$

$$45 \text{ XOR } 23 = N$$

$$(23)_{10} = 00010111_2$$

~~$$(23)_{10} = 00010111_2$$~~

$$(23)_{10} = (00010111)_2$$

$$(45)_{10} = (00101101)_2$$

XOR them :-

$$\begin{array}{r} 00010111 \\ \oplus 00101101 \\ \hline 00111010 \end{array}$$

$$\begin{array}{r} 2 \overline{) 23} \quad 1 \\ 2 \overline{) 22} \quad 1 \\ 2 \overline{) 5} \quad 1 \\ 2 \overline{) 2} \quad 0 \\ 1 \end{array}$$

$$\begin{array}{r} 2 \overline{) 45} \quad 1 \\ 2 \overline{) 22} \quad 0 \\ 2 \overline{) 11} \quad 1 \\ 2 \overline{) 5} \quad 1 \\ 2 \overline{) 2} \quad 0 \\ 1 \end{array}$$

convert them into decimal.

$$\begin{aligned}(0011010)_2 &= 0 \times 2^0 + 1 \times 2^1 + 0 \times 2^2 + 1 \times 2^3 + 1 \times 2^4 + \\ &\quad 0 \times 2^5 + 0 \times 2^6 + 0 \times 2^7 \\ &= 0 + 2 + 0 + 8 + 16 + 32 + 0 + 0 \\ &= 2 + 8 + 16 + 32 \\ &= 10 + 48 \\ &= \underline{\underline{(58)_{10}}}\end{aligned}$$

$$\therefore N \text{ is } \underline{\underline{(58)_{10}}}$$