

QUESTION - 5 / COMPLEMENT

42 \rightarrow binary

$$\begin{array}{r|l} 2 & 42 \quad 0 \\ 2 & 21 \quad 1 \\ 2 & 10 \quad 0 \\ 2 & 5 \quad 1 \\ 2 & 2 \quad 0 \\ & 1 \end{array}$$

$$\Rightarrow 42_{10} = (101010)_2 \text{ (6 bits)}$$

$$42_{10} = (00101010)_2 \text{ (8 bits)}$$

To find 2's complement of -42 , find the 1's complement of $\text{bin}(42)$ and add 1 to it.

$$\text{1's complement of } (00101010)_2 = (11010101)_2$$

$$\begin{array}{r} \text{Add 1 to } (11010101)_2 = 11010101 \\ + 00000001 \\ \hline 11010110 \end{array}$$

\therefore the 8-bits 2's complement of $-42_{10} = 11010110$