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22) Min. $w(\bar{x}) = 3$ — 3 marks.

Reason: — 2 marks.

1) Arithmetic is done in binary domain.
2) Minimum value of $w(\bar{x})$ is the minimum number of columns in 'H' that add upto 0.
3) Minimum value of $w(\bar{x})$ is the minimum number of columns that are linearly dependent.

$$H = \begin{bmatrix} 0 & 0 & \cdots & 0 & \cdots & 1 \\ 0 & 0 & & 0 & & 1 \\ 0 & 0 & & 0 & & 1 \\ 0 & 1 & & 1 & & 1 \\ 1 & 0 & & 1 & & 1 \end{bmatrix}$$

Take these 3 cols as examples to show $w(\bar{x}) = 3$.

ie. $\begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 1 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 0 \\ 1 \\ 0 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 0 \\ 1 \\ 1 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$.