Step-1

We have to find the null space matrix N (of special solutions) for A, B and C:

$A = \begin{bmatrix} I & I \end{bmatrix}$, $B = \begin{bmatrix} I & I \\ 0 & 0 \end{bmatrix}$, and $C = \begin{bmatrix} I & I & I \end{bmatrix}$

Step-2

Now $A = \begin{bmatrix} I & I \end{bmatrix}$ if I is n by n matrix then A is in the reduced row echelon form. Therefore there are first n are pivot variables, next n are free variables. Therefore the null space matrix of A is $\begin{bmatrix} -I \\ I \end{bmatrix}$ $2n$ by n matrix.

Step-3

Now $B = \begin{bmatrix} I & I \\ 0 & 0 \end{bmatrix}$, if I is n by n there are n pivot variables and next â€˜nâ€™ are free variables.

Therefore the null space matrix $= \begin{bmatrix} -I \\ I \end{bmatrix}$

Step-4

And $C = \begin{bmatrix} I & I & I \end{bmatrix}$, there are a first n are pivot variables next $2n$ are free variables.

Therefore the null space matrix is in the form $= \begin{bmatrix} -I & -I \\ I & 0 \\ I & 0 \end{bmatrix}$