The result of the tensor product is following:

$$H \otimes I \otimes I$$

$$\Downarrow$$

$$\frac{1}{\sqrt{2}} \begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & 0 & 1 \\ 1 & 0 & 0 & 0 & -1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & -1 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & 0 & -1 \end{bmatrix} \times \begin{bmatrix} \frac{a}{\sqrt{2}} \\ 0 \\ 0 \\ \frac{a}{\sqrt{2}} \\ 0 \\ \frac{b}{\sqrt{2}} \\ \frac{b}{\sqrt{2}} \\ 0 \end{bmatrix} = \frac{1}{\sqrt{2}} \begin{bmatrix} \frac{a}{\sqrt{2}} \\ \frac{b}{\sqrt{2}} \\ \frac{b}{\sqrt{2}} \\ \frac{a}{\sqrt{2}} \\ \frac{a}{\sqrt{2}} \\ -\frac{b}{\sqrt{2}} \\ -\frac{b}{\sqrt{2}} \\ \frac{a}{\sqrt{2}} \end{bmatrix} \cong \frac{1}{\sqrt{2}} \begin{bmatrix} \frac{a}{\sqrt{2}} |000\rangle \\ \frac{b}{\sqrt{2}} |001\rangle \\ \frac{b}{\sqrt{2}} |010\rangle \\ \frac{a}{\sqrt{2}} |011\rangle \\ \frac{a}{\sqrt{2}} |100\rangle \\ -\frac{b}{\sqrt{2}} |101\rangle \\ -\frac{b}{\sqrt{2}} |110\rangle \\ \frac{a}{\sqrt{2}} |111\rangle \end{bmatrix}$$

Another way (ket notation) to write the above state is:

$$\Rightarrow \frac{1}{2}\left[a|000\rangle + b|001\rangle + b|010\rangle + a|011\rangle + a|100\rangle - b|101\rangle + -b|110\rangle + a|111\rangle\right]$$

$$\Rightarrow \frac{1}{2}\left[|00\rangle\left(a|0\rangle + b|1\rangle\right) + |01\rangle\left(a|1\rangle + b|0\rangle\right) + |10\rangle\left(a|0\rangle - b|1\rangle\right) + |11\rangle\left(a|1\rangle - b|0\rangle\right)\right]$$

This is the final state of all 3 qubits. We measure the qubits α & β now. The result will be either of the four states which are:

$|00\rangle$, $|01\rangle$, $|10\rangle$, $|11\rangle$

If its $|00\rangle$ we apply the I transformation which means we dont do anything to γ. following are the operations that we in all 4 cases.

$\lvert\alpha\beta\rangle$	$\lvert\gamma\rangle$	Operator
$\lvert 00\rangle$	$a\lvert 0\rangle + b\lvert 1\rangle$	I
$\lvert 01\rangle$	$a\lvert 1\rangle + b\lvert 0\rangle$	X
$\lvert 10\rangle$	$a\lvert 0\rangle - b\lvert 1\rangle$	Y
$\lvert 11\rangle$	$a\lvert 1\rangle - b\lvert 0\rangle$	Z