Step-1

Suppose $A=\begin{bmatrix}0 & 1\\ a & b\end{bmatrix}$

The characteristic equation of this matrix is $\det\left(A-\lambda \mathrm{I}\right)=0$

$\Rightarrow\begin{vmatrix}-\lambda & 1\\ a & b-\lambda\end{vmatrix}=0$

$\Rightarrow \lambda^2-b\lambda-a=0$

$\Rightarrow \lambda_1=\dfrac{b+\sqrt{b^2+4a}}{2},\lambda_2=\dfrac{b-\sqrt{b^2+4a}}{2}$ are the eigen values of A.

Step-2

But given eigen values are 4 and 7

So, we follow that $\dfrac{b+\sqrt{b^2+4a}}{2}=7,\dfrac{b-\sqrt{b^2+4a}}{2}=4$

Adding the respective sides of these equations, we get $b = 11$

Further, substation gives $11+\sqrt{121+4a}=14,11-\sqrt{121+4a}=8$

$\Rightarrow \sqrt{121+4a}=3,$

$\Rightarrow 121+4a=9$
$\Rightarrow 4a=-112$
$\Rightarrow a=-28$

Therefore, the required matrix is $\begin{bmatrix}0 & 1\\ -28 & 11\end{bmatrix}$