According to the question,

diagonal matrix of eigenvalues, $\underline{L} = \begin{pmatrix} \lambda_1 & & 0 \\ & \lambda_2 & \\ 0 & & \ddots \;\; \lambda_n \end{pmatrix}$

and

matrix formed of columns of eigenvector, $\underline{V} = (\vec{v}_1 \;\; \vec{v}_2 \;\; \cdots \;\; \cdots \;\; \vec{v}_n)$

Now, as $\{\vec{v}_1, \vec{v}_2, \vec{v}_3, \ldots, \vec{v}_n\}$ is a linearly independent set,

therefore $\underline{V}$ is invertible.

Now,

$$\begin{aligned}
\underline{M}\,\underline{V} &= (\underline{M}\vec{v}_1 \quad \underline{M}\vec{v}_2 \quad \cdots \quad \cdots \quad \underline{M}\vec{v}_n) \\
&= (\lambda_1\vec{v}_1 \quad \lambda_2\vec{v}_2 \quad \cdots \quad \cdots \quad \lambda_n\vec{v}_n) \\
&= (\vec{v}_1 \quad \vec{v}_2 \quad \cdots \quad \cdots \quad \vec{v}_n) \begin{pmatrix} \lambda_1 & & 0 \\ & \lambda_2 & \\ 0 & & \ddots \;\; \lambda_n \end{pmatrix} \\
&= \underline{V}\,\underline{L}
\end{aligned}$$

$\Rightarrow \underline{M} = \underline{V}\,\underline{L}\,\underline{V}^{-1}$; Here $V_{ij} = (v_j)_i$