Ans 2   Diagonalization $\left[\text{Anirudh Garg } 22B1005\right]$

A diagonizable operator O, having eigenvalues with multiplicity greater than 1, can be represented as:

$$O = \sum_\lambda \lambda P_\lambda = P_1 - P_{-1}$$

also we know that:

$$I = \sum_\lambda P_\lambda = P_1 + P_{-1}$$

Hence,

$$P_{\pm 1} = \frac{I \pm O}{2} \qquad //$$