

SNS COLLEGE OF TECHNOLOGY



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DEPARTMENT OF MATHEMATICS

UNIT II ORTHOGONAL TRANSFORMATION OF A REAL SYMMETRIC MATRIX

(2) Diagonalize the matrix $A = \begin{pmatrix} 2 & 0 & 4 \\ 0 & 6 & 0 \\ 4 & 0 & 2 \end{pmatrix}$ by means
of an orthogonal transformation.
$\lambda = -2, b, 6$
$X = \begin{pmatrix} 1 \\ 0 \\ -i \end{pmatrix}, \begin{pmatrix} 1 \\ 0 \\ 1 \end{pmatrix}, \begin{pmatrix} 0 \\ i \\ 0 \end{pmatrix}$
$N^{T}AN = \mathcal{D} = \begin{pmatrix} -2 & 0 & 0 \\ 0 & 6 & 0 \\ 0 & 0 & L \end{pmatrix}$
(3) Diagonalize the matrix $A = \begin{pmatrix} 2 & 1 & -1 \\ 1 & 1 & -2 \\ -1 & -2 & 1 \end{pmatrix}$ by means
of an orthogonal transformation.
Soln: A = -1, 1, 4
The Reduce the matrix $\begin{pmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{pmatrix}$ to diagonal form.
<u>soln:</u> $\lambda = 1, 1, 4$