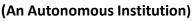


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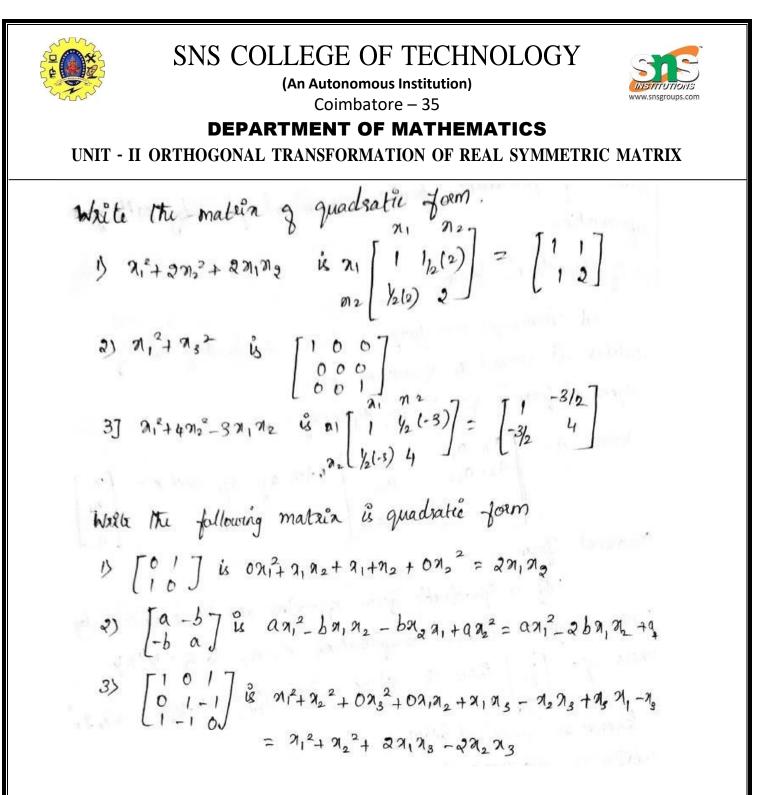
Coimbatore – 35

DEPARTMENT OF MATHEMATICS

UNIT - II ORTHOGONAL TRANSFORMATION OF REAL SYMMETRIC MATRIX

Defn: of quadratic form: -A homoegeneous poly. of degree 2 in any no. of variables is called as quadrate form eyeneral form is p= = ? = ? aij ninj = xTAX where $A = \begin{bmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ a_{n_1} & a_{n_2} & \dots & a_{nn} \end{bmatrix}$ with $a_{2j} = a_{ji}$ and $x = \begin{bmatrix} n_1 \\ n_2 \\ \vdots \\ n \end{bmatrix}$ Canonical Jorm: by a quadratic form of = x Ax can be reduced by a non-singular linear transformation x = NY to g = Y"DY where $y = \begin{bmatrix} y_1 \\ y_2 \end{bmatrix}$ then $g = y^7 Dy = \lambda y_1^2 + \lambda^2 y_2^2 + \lambda_3 y_3^2 + \cdots + \lambda_n y_n^2$ is known as canonical form. Matrin & quadratie form:-The symmetric matrin A & quadratie form obtained by placing the corefle & ni² in air & placing 1/2 (coeff. & ning) is remaining aij & aji position.

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