•• Notes for the lecture.

(i) Multiplication of matrix by Scalar

Let λ be a scalar (real or complex) & $A = [a_{ij}]_{m\times n}$ be a matrix. Thus the product λA is defined as $\lambda A = [b_{ij}]_{m\times n}$ where $b_{ij} = \lambda a_{ij}$

(ii) Transpose of Matrix

Let $A = [a_{ij}]_{m\times n}$. Then transpose of A is denoted by A' or (A^T) and is defined as

$$A^T = [b_{ij}]_{n\times m} \text{ where } b_{ij} = a_{ji}$$

example: $A = \begin{bmatrix} 1 & 2 & 3 \\ a & b & c \\ x & y & z \end{bmatrix}$, $A' \begin{bmatrix} 1 & a & x \\ 2 & b & y \\ 3 & c & z \end{bmatrix}$

(iii) Symmetric and Skew Symmetric matrix

(i) A square matrix is said to be Symmetric

If $A' = A$

(ii) A square matrix is said to be Skew-Symmetric

If $A' = -A$