

**NAZARETH COLLEGE OF ARTS &
SCIENCE**

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SUBJECT :ALGEBRA

TOPIC – MATRICES

DEFINITIONS

1. A matrix is a rectangular arrangement of elements in rows & columns.
It is denoted by a capital letter.

$$A = [a_{ij}] \quad \text{where } i = 1, 2, 3, \dots, m \\ j = 1, 2, 3, \dots, n \\ \text{(or)}$$

$$A = \begin{bmatrix} a_{11} & a_{12} & a_{13} & \dots & a_{1n} \\ a_{21} & a_{22} & a_{23} & \dots & a_{2n} \\ \dots & \dots & \dots & \dots & \dots \\ a_{m1} & a_{m2} & a_{m3} & \dots & a_{mn} \end{bmatrix}$$

2.If $A = A^T$, then A is symmetric .

3. If $A = - A^T$, then A is skew symmetric.

4.Conjugate of a matrix :

A matrix obtained from the givrn matrixA by replacing its element by the corresponding conjugate complex numbers is called conjugate of A. It is denoted by $\bar{A}$.

Types of Matrices

Row matrix: A matrix having a single row is called a row matrix. **Column**

matrix: A matrix having a single column is called a column matrix.

Square matrix: A matrix having equal number of rows and columns is called a square matrix.

Rectangular Matrix: A matrix having unequal number of rows and columns is called a rectangular matrix.

Diagonal matrices: A matrix having only diagonal elements as non-zero numbers is known as a diagonal matrix.

Identity matrices: A diagonal matrix having all the diagonal elements equal to 1 is called an identity matrix.