Ex// $A = \begin{bmatrix} 1 & 0 & 0 \\ 2 & 2 & 0 \\ 1 & 3 & 4 \end{bmatrix}$

2- A Column matrix (or column vector)

$\begin{bmatrix} 2 \\ 1 \end{bmatrix}, \begin{bmatrix} -1 \\ 4 \\ 10 \end{bmatrix}$

3- A row matrix (or row vector)

$[7 \quad 1 \quad -2], [3 \quad 2 \quad 1 \quad 0 \quad -1]$

4- A zero matrix (or null matrix)

$0_{2x3} = \begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$ *and* $0_{2x2} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$

5- A diagonal matrix is a square matrix where all of the elements are zero. Thus A [aij] is diagonal matrix if aij= 0 for i≠ j

Ex// $\begin{bmatrix} 3 & 0 \\ 0 & 2 \end{bmatrix}, \begin{bmatrix} -2 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 4 \end{bmatrix}, \begin{bmatrix} 5 & 0 & 0 \\ 0 & -4 & 0 \\ 0 & 0 & 0 \end{bmatrix}$

6- A matrix A = [aij] is symmetric if it square and aij=aji for all values of I and j.

$A = \begin{bmatrix} 3 & -1 \\ -1 & 2 \end{bmatrix}, B = \begin{pmatrix} 5 & -1 & 3 & 7 \\ -1 & -9 & 2 & 5 \\ 3 & 2 & 6 & 0 \\ 7 & 5 & 0 & 2 \end{pmatrix}$

7- Identity matrix

If A diagonal matrix A = [aij] equal to 1 and every element equal zero then A is called identity matrix . and denoted by in.

Ex// $A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} = I_2 \qquad B = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} = I_3$

8- Tow matrice, A = [aij] and B = [bij] are said to be equal if aij= bij

Ex// $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \qquad B = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$