WORKSHEET OF MATRICES

Q1- If $A=\begin{bmatrix}2 & 1\\ 4 & 0\end{bmatrix}$, $B=\begin{bmatrix}5 & 6\\ 0 & 1\end{bmatrix}$ and $C=\begin{bmatrix}5 & 3\\ 8 & 5\end{bmatrix}$

Find,

(1) $3A - 2B + C$

(2) $(3A + 2B)^T$

(3) If $A + B - D = 0$, find D

(4) $2A + 3B + I$

(5) $5A + 2B + 7I$

Q2- If Matrix $A = \begin{bmatrix}1 & 2\\ 3 & 2\end{bmatrix}$ find the value of A^2 and A^3.

Q3- Find the value of $(5A-2B+I)^T$, where matrices

$A=\begin{bmatrix}2 & 4 & 0\\ 7 & 8 & 1\\ 5 & 8 & 3\end{bmatrix}$ and $B=\begin{bmatrix}4 & 3 & 2\\ 5 & 8 & 1\\ 0 & 6 & 4\end{bmatrix}$

Q4- Define

1) Square Matrix

2) Null Matrix

3) Identity Matrix

4) Diagonal Matrix

5) Symmetric and Skew Symmetric Matrix

6) Triangular Matrix

Q5- Find the inverse of the following Matrices-

(1) $\begin{bmatrix}1 & 2 & -3\\ 2 & 3 & 2\\ 3 & -3 & 4\end{bmatrix}$

(2) $\begin{bmatrix}1 & -3 & 2\\ 2 & 0 & 0\\ 1 & 4 & 1\end{bmatrix}$

(3) $\begin{bmatrix}3 & -3 & 4\\ 2 & -3 & 4\\ 0 & -1 & 1\end{bmatrix}$

(4) $\begin{bmatrix}1 & 1 & -3\\ 2 & 3 & 2\\ 3 & -3 & 4\end{bmatrix}$

Q6- If $A=\begin{bmatrix}1 & 3\\ 4 & 5\end{bmatrix}$ and $B=\begin{bmatrix}5 & 3\\ 4 & 7\end{bmatrix}$ verify whether AB = BA.

Q7- Solve by Gauss Jordan elimination method

(a) $x + 2y + z = 7$, $x + 2y + 5z = 4$, $2x + 2y + z = 1$

(b) $x - 2y + 3z = 1$, $x + 3y - 5z = 2$, $2x + 5y + 9z = 3$

(c) $x + 2y - 3z = -4$, $x + 3y + 2z = 2$, $3x - 3y - 4z = 11$

Q8- Find the rank of the following Matrices

(a) $\begin{bmatrix} 1 & 2 & 3 \\ 1 & 4 & 2 \\ 2 & 6 & 5 \end{bmatrix}$

(b) $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 6 \end{bmatrix}$

(c) $\begin{bmatrix} 1 & 2 & 3 \\ 3 & 4 & 5 \\ 4 & 5 & 6 \end{bmatrix}$

(d) $\begin{bmatrix} 1 & -2 & 3 \\ 3 & -6 & 9 \end{bmatrix}$

Q9 - If $A = \begin{bmatrix} 2 & 5 & 4 \\ 1 & 4 & 3 \\ 6 & 8 & 10 \end{bmatrix}$

(a) Find the value of determinant A

(b) Verify, $(A^T)^T = A$

Q10- Find A^{-1} by elementary row transformation

(a) $\begin{bmatrix} 1 & -1 & 0 \\ 2 & 5 & 3 \\ 0 & 2 & 1 \end{bmatrix}$

(b) $\begin{bmatrix} 1 & -3 & 2 \\ 2 & 0 & 0 \\ 1 & 4 & 1 \end{bmatrix}$

(c) $\begin{bmatrix} 3 & 1 & -3 \\ 2 & 3 & 2 \\ 0 & -3 & 4 \end{bmatrix}$