**ASSIGNMENT NO.- 1[Ch-3 (Matrices)]**

**Class -XII**

1. If $\left[\begin{matrix}3&4\\2&x\end{matrix}\right]\left[\begin{matrix}x\\1\end{matrix}\right]=\left[\begin{matrix}19\\15\end{matrix}\right]$ ,find the value of $x.$

2. Solve for $x$ and $y$ : $x\left[\begin{matrix}2\\1\end{matrix}\right]+y\left[\begin{matrix}3\\5\end{matrix}\right]+\left[\begin{matrix}-8\\-11\end{matrix}\right]=O.$

3. If $A=\left[\begin{matrix}\cos(θ)&i\sin(θ)\\isinθ&cosθ\end{matrix}\right]$,then prove by principle of mathematical induction that

 $A^{n}=\left[\begin{matrix}\cos(nθ)&isin nθ\\isin nθ&\cos(nθ)\end{matrix}\right]$ for all $n\in N.$

4. If $A=\left[\begin{matrix}2&3\\4&5\end{matrix}\right]$,prove that $A-A^{T}$ is a skew-symmetric matrix.

5. Express the matrix $A$ as the sum of a symmetric and a skew-symmetric matrix,where

 $A=\left[\begin{matrix}2&4&-6\\7&3&5\\1&-2&4\end{matrix}\right]$.

6. If $A, B$ are square matrices of same order and $B$ is a skew-symmetric matrix,show that $A^{'}BA$ is

 skew-symmetric.

7. Using the elementary transformations ,find the inverse of the following matrix,

 $A=\left[\begin{matrix}1&2&3\\2&5&7\\-2&-4&-5\end{matrix}\right]$.

8. Find the matrix $X$ so that $X\left[\begin{matrix}1&2&3\\4&5&6\end{matrix}\right]=\left[\begin{matrix}-7&-8&-9\\2&4&6\end{matrix}\right]$.

9. For the matrix $A=\left[\begin{matrix}2&-1&1\\-1&2&-1\\1&-1&2\end{matrix}\right]$,show that $A^{2}-5A+4I=O.$Hence ,find $A^{-1}.$

10. A trust fund has Rs 35000 to be invested in two different types of bands.The first bond pays 8%

 interest per annum which will be given to orphanage and second bond pays 10% interest per

 annum which will be given to an N.G.O.(Cancer Aid Society).Using matrix multiplication

 ,determine how to divideRs 35000 among two types of bonds if the trust fund obtains an annual

 total interest of Rs 32000.

11. If $A=\left[\begin{matrix}\cos(2θ)&\sin(2θ)\\-\sin(2θ)&\cos(2θ)\end{matrix}\right]$,then find $A^{3}.$