Assignment 6

1. Find the eigen values and corresponding eigen vectors of the matrices

(i) $\begin{pmatrix} 2 & 1 & 1 \\ 1 & 2 & 1 \\ 0 & 0 & 1 \end{pmatrix}$ **(ii)** $\begin{pmatrix} 2 & -1 \\ -1 & 2 \end{pmatrix}$ **(iii)** $\begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}$ **(iv)** $\begin{pmatrix} 3 & 0 & 3 \\ 0 & 3 & 0 \\ 3 & 0 & 3 \end{pmatrix}$

2. Find whether the matrix $\begin{pmatrix} 1 & -3 & 3 \\ 3 & -5 & 3 \\ 6 & -6 & 4 \end{pmatrix}$ **is diagonalisable. If so diagonalise it. Find the matrix which will diagonalise it.**

3. Diagonalise, if possible, the matrix $\begin{pmatrix} 2 & 0 \\ 1 & 3 \end{pmatrix}$**. Find the matrix which diagonalise this.**