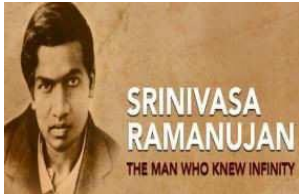
 SRM INSTITUTE OF SCIENCE & TECHNOLOGY (Deemed to be University u/s of UGC Act, 1956)	SRM Institute of Science and Technology Kattankulathur		 SRINIVASA RAMANUJAN THE MAN WHO KNEW INFINITY
	DEPARTMENT OF MATHEMATICS		
	18MAB101T Calculus and Linear Algebra		
	UNIT –I Matrices		
Sl.No.	Tutorial Sheet -1	Answers	
Part – A			
1	If $A = \begin{pmatrix} 3 & 5 & 3 \\ 0 & 4 & 6 \\ 0 & 0 & 1 \end{pmatrix}$, find the eigenvalues of (i) A (ii) A^{-1} (iii) adj A (iv) A^3	(i) 3,4,1 (ii) $1/3, 1/4, 1$ (iii) 12, 4, 3 (iv) 27, 64, 1	
2	Two of the eigenvalues of $A = \begin{pmatrix} 2 & 0 & 1 \\ 0 & 2 & 0 \\ 1 & 0 & 2 \end{pmatrix}$ are 1 and 2. Find the eigenvalues of A^2 .	1, 4, 9	
3	Find the sum and product of the eigenvalues of the matrix $A = \begin{pmatrix} -2 & 2 & -3 \\ 2 & 1 & -6 \\ -1 & -2 & 0 \end{pmatrix}$	-1, 45	
4	Find the eigenvalues and eigenvectors of the matrix $A = \begin{pmatrix} 4 & 1 \\ 3 & 2 \end{pmatrix}$	$1, 5$ $\begin{pmatrix} 1 \\ -3 \end{pmatrix}, \begin{pmatrix} 1 \\ 1 \end{pmatrix}$	
5	Find the characteristic equation of $A = \begin{pmatrix} 3 & -1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 3 \end{pmatrix}$	$\lambda^3 - 11\lambda^2 + 36\lambda - 36 = 0$	
Part – B			
6	Find the eigenvalues and eigenvectors of $\begin{pmatrix} 3 & 1 & 4 \\ 0 & 2 & 6 \\ 0 & 0 & 5 \end{pmatrix}$	$2, 3, 5$ $\begin{pmatrix} -1 \\ 1 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 3 \\ 2 \\ 1 \end{pmatrix}$	
7	Find the eigenvalues and eigenvectors of $\begin{pmatrix} 2 & 1 & 1 \\ 2 & 3 & 2 \\ 3 & 3 & 4 \end{pmatrix}$	$1, 1, 7$ $\begin{pmatrix} 0 \\ 1 \\ -1 \end{pmatrix}, \begin{pmatrix} 1 \\ 0 \\ -1 \end{pmatrix}, \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}$	
8	Find the eigenvalues and eigenvectors of $\begin{pmatrix} 6 & -6 & 5 \\ 14 & -13 & 10 \\ 7 & -6 & 4 \end{pmatrix}$	$-1, -1, -1$ $\begin{pmatrix} 0 \\ 5 \\ 6 \end{pmatrix}, \begin{pmatrix} 5 \\ 0 \\ -7 \end{pmatrix}, \begin{pmatrix} 6 \\ 7 \\ 0 \end{pmatrix}$	

9	Find the eigenvalues and eigenvectors of $\begin{pmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{pmatrix}$	0, 3, 15 $\begin{pmatrix} 1 \\ 2 \\ 2 \end{pmatrix}, \begin{pmatrix} 2 \\ 1 \\ -2 \end{pmatrix}, \begin{pmatrix} 2 \\ -2 \\ 1 \end{pmatrix}$
10	Find the eigenvalues and eigenvectors of $\begin{pmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{pmatrix}$	8, 2, 2 $\begin{pmatrix} 2 \\ -1 \\ 1 \end{pmatrix}, \begin{pmatrix} 0 \\ 1 \\ 1 \end{pmatrix}, \begin{pmatrix} 1 \\ 1 \\ -1 \end{pmatrix}$