Mahatma Gandhi Mission's College of Engineering & Technology

Kamothe , Navi Mumbai

Class: S.E. IT /Comps   Subject: AM IV

Assignment No. : 1 (Matrix Theory): Descriptive Questions:

Qn .No	Questions	Module	C.O	Level
1	If the two eigen values of A = $\begin{bmatrix} 2 & 0 & 1 \\ 0 & 2 & 0 \\ a & 0 & 2 \end{bmatrix}$ are 2 & 3, find the value of a.	3.1	CO 3	3
2	If A is a singular matrix of order 3 and two eigen values of matrix A are 2,3 , find the third eigen value	3.1	CO 3	3
3	Verify that the sum of the elements in the diagonal elements of the matrix A = $\begin{bmatrix} 3 & -1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 3 \end{bmatrix}$ is equal to the sum of the eigen values.	3.1	CO 3	3
4	Find the eigen values and eigen vectors of the following matrices. a . $\begin{bmatrix} 1 & 0 & -1 \\ 1 & 2 & 1 \\ 2 & 2 & 3 \end{bmatrix}$ b. $\begin{bmatrix} -2 & 2 & -3 \\ 2 & 1 & -6 \\ -1 & -2 & 0 \end{bmatrix}$ c. $\begin{bmatrix} 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{bmatrix}$	3.1	CO 3	4
5	Use Cayley Hamilton theorem to find **A^{-1}** if A = $\begin{bmatrix} 1 & 1 & 3 \\ 2 & 3 & -3 \\ -2 & -4 & 4 \end{bmatrix}$	3.2	CO 3	4
6	Show that the given matrices are diagonalisable. Find diagonal matrix and transforming matrix (1) $\begin{bmatrix} 4 & 2 & -2 \\ -5 & 3 & 2 \\ -2 & 4 & 1 \end{bmatrix}$ (2) $\begin{bmatrix} -2 & 2 & -3 \\ 2 & 1 & -6 \\ -1 & -2 & 0 \end{bmatrix}$	3.3	CO 3	4
7	Check whether the following matrices are diagonalisable or not. If yes, find diagonal matrix & transforming matrix $\begin{bmatrix} 3 & 10 & 5 \\ -2 & -3 & -4 \\ 3 & 5 & 7 \end{bmatrix}$	3.3	CO 3	4
8	Find the symmetric matrix of order 3 having eigen values 3 ,6 , 9 with corresponding eigen vectors X 1 = [1 2 2]', X 2 = [-2 2 -1]', X3	3.1	CO 3	3

9	If A = $\begin{bmatrix} 3 & 1 & -1 \\ 2 & 2 & -1 \\ 2 & 2 & 0 \end{bmatrix}$ find A^{50}	3.4	CO 3	4