[Total No. of CO's: 2] **Seat No:** **[Total No. of Pages: 1]**

G. H. Raisoni College of Engineering and Management, Pune.
(An Autonomous Institution)
F.Y B. Tech (All Branches) (Term-II)
CAE-I (2020 Pattern)

Subject Name: Linear algebra and statistics (UBSL153)

[Time: 1 Hours] **[Max. Marks-15]**

COURSE OUTCOME:
CO1: Apply simple operations like adding, multiplying, inverting, transposing, etc. in matrices & vectors.
CO2: Apply the concepts of Linear Algebra in programming languages. Course Outcomes
CO3: Apply the concepts of least squares methods and basic problems in probability.
CO4: Apply the knowledge of Random variables.
CO5: Apply the knowledge of Probability distributions to solve engineering problems.

CO1	***a)***	Define vector space.	**[1]**	**L1**
	b)	Determine whether the set of vectors in R^2 is linearly independent or linearly dependent. S = {(1,2), (2,4)}	**[2]**	**L2**
	c)	Show that the set {(1,2,3), (0,1,2), (-2,0,1)} spans R^3.	**[3]**	**L3**
	d)	Determine which of these two subsets is a subspace of R^2 (a) The set of points on the line x +2y = 0 (b) The set of points on the line x +2y = 1	**[4]**	**L4**
CO2	***a)***	Explain symmetric matrix with suitable examples	**[2]**	**L2**
	b)	Let T: $R^3 \rightarrow R^3$ be a linear transformation such that T (1,0,0) = (2, -1,4) T (0,1,0) = (1,5, -2) T (0,0,1) = (0,3,1). Then Find T (1,3, -2)	**[3]**	**L3**
		OR		
	c)	Find the eigenvalues and corresponding eigenvectors of $A = \begin{bmatrix} 2 & 3 & 1 \\ 0 & -1 & 2 \\ 0 & 0 & 3 \end{bmatrix}$	**[3]**	**L3**