Chandigarh Engineering College Landran, Mohali

Department of Applied Sciences

Assignment No 1

Subject and Subject code: Mathematics -1/ BTAM-104-18 **Semester 1st (CSE/IT)**

Course Outcomes

CO1: analyze various problems by using fundamental theorems..

CO2: apply differential and integral calculus to evaluate definite, improper integrals and its applications.

CO3: deal with the concept of linear dependence, independence and linear transformations.

CO4: solve the linear equations by applying the knowledge of matrix algebra.

Assignment related to COs		Relevance to CO No.
SECTION - A (2Marks Each)		
Q1.	(a) What is the rank of a singular Matrix of order n. (b) Define Skew symmetric matrix with the help of an example.	**CO-4**
Q2.	Find inverse of $A = \begin{bmatrix} 1 & 1 & 0 \\ 2 & -3 & 0 \\ 3 & -3 & 1 \end{bmatrix}$ using Gauss Jordan method. Also find the Rank of the matrix.	**CO-4**
Q3.	Are the vectors $(1,2,1)$, $(2,1,4)$, $(1,8,-3)$, $(4,5,6)$ linearly dependent? If yes, find relation between them.	**CO-3**
Q4.	Evaluate $\begin{vmatrix} 1 & a & a^2 \\ 1 & b & b^2 \\ 1 & c & c^2 \end{vmatrix}$ without expanding.	**CO-4**
Q5.	Prove $\frac{\lvert A \rvert}{\alpha}$ is an eigen value of $adj\ (A)$eigen vector remaining the same if α is an eigen value of A and X is corresponding Eigen vector.	**CO-3**
SECTION – B (4 Marks Each)		
Q6.	Solve by Cramer's rule $5x - 7y + z = 11, 6x - 8y - z = 15,\ 3x + 2y - 6z = 7$.	**CO-4**
Q7.	Solve by Gauss Elimination method$x + 2y + z = 7,\ x + 3z = 11,\ 2x - 3y = 1$.	**CO-4**

Q8.	For what values of λ does the system $x+y+z=1,\ x+2y+4z=\lambda,\ x+4y+10z=\lambda^2$ has a solution. Solve it in each case.	**CO-4**
Q9.	Find Eigen values and Eigen vectors of $A=\begin{bmatrix}1&1&0\\0&1&1\\0&0&1\end{bmatrix}$ and hence comment whether the matrix is diagonalizable or not ?	**CO-3**
Q10.	. Examine whether A is similar to B or not where $$\mathrm{A}=\begin{bmatrix}1&0&-1\\1&2&1\\2&2&3\end{bmatrix} \text{ and } \mathrm{B}=\begin{bmatrix}-2&2&-3\\2&1&-6\\-1&-2&0\end{bmatrix}$$	**CO-3**