NARSIMHA REDDY ENGINEERING COLLEGE

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Estd.2007

MATRICES AND CALCULUS

UNIT – I: Matrices

S.NO	Questions	BT	CO	PO
	Part – A(Short answer questions)			
1	Define rank of a matrix and give one example	L1	CO1	PO1
2	Find the value of k such that the rank of $\begin{bmatrix} 1 & 2 & 3 \\ 2 & k & 7 \\ 3 & 6 & 10 \end{bmatrix}$ is 2.	L2	CO1	PO2
3	Define Echelon form and normal form	L1	CO1	PO1
4	State the different conditions in non - homogeneous system of equations.	L2	CO1	PO1
5	Find the rank of the matrix A= $\begin{bmatrix} 0 & 1 & -3 & -1 \\ 1 & 0 & 1 & 1 \\ 3 & 1 & 0 & 2 \\ 1 & 1 & -2 & 0 \end{bmatrix}$ by reducing to echelon form.	L2	CO1	PO2
6	Define symmetric matrix and give a suitable example.	L1	CO1	PO1
7	Define an orthogonal matrix and give one example.	L1	CO1	PO1
9	Find the rank of the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 3 & 4 & 5 \\ 4 & 5 & 6 \end{bmatrix}$	L2	CO1	PO2
10	Find the adjoint of the matrix $\begin{bmatrix} 1 & 2 & 1 \\ 3 & 2 & 2 \\ 1 & 1 & 2 \end{bmatrix}$	L2	CO1	PO1

S.NO	Part –B (Long answer questions)	BT	CO	PO
1(a)	Find the rank of the matrix $\begin{bmatrix} 1 & 2 & 1 & 2 \\ 1 & 3 & 2 & 2 \\ 2 & 4 & 3 & 4 \\ 3 & 7 & 5 & 6 \end{bmatrix}$, by reducing it to the normal form.	L2	CO1	PO2
1(b)	Find the Inverse of a matrix $A = \begin{bmatrix} 4 & -1 & 1 \\ 2 & 0 & -1 \\ 1 & -1 & 3 \end{bmatrix}$ by using Gauss-Jordan method.	L3	CO1	PO2
2 (a)	Reduce the Matrix $A = \begin{bmatrix} 2 & -4 & 3 & -1 & 0 \\ 1 & -2 & -1 & -4 & 2 \\ 0 & 1 & -1 & 3 & 1 \\ 4 & -7 & 4 & -4 & 5 \end{bmatrix}$ into	L2	CO1	PO2

Dr. P Mahendra Varma

	Echelon form. Hence find its Rank.			
2(b)	Examine for what values of p and q, so that the equations 2x+3y+5z = 9, 7x+3y+2z=8, 2x+3y+pz=q *have* (i) No solution (ii) Unique solution (iii) Infinitely many solutions.	L4	CO1	PO2
3(a)	Solve system of equations x+y+w= 0, y+z= 0 , x+y+z+w = 0 , x+y+2z= 0 .	L3	CO1	PO1
3(b)	Solve the equations 3x+y+2z=3, 2x-3y-z=-3, x+2y+z=4 using gauss elimination method.	L3	CO1	PO1
4	Solve the system of equations by gauss seidel method 20x+y-2z=17, 3x+20y-z=-18, 2x-3y+20z=25 .	L4	CO1	PO3
5(a)	Find the rank of the value of k , if the rank of the matrix A is 2 , where A=$\begin{bmatrix} 0 & 1 & -3 & -1 \\ 1 & 0 & 1 & 1 \\ 3 & 1 & 0 & 2 \\ 1 & 1 & k & 0 \end{bmatrix}$	L2	CO1	PO1
5(b)	Show that the equations x+2y-z=3, 3x-y+2z =1, 2x-2y+3z = 2, x-y+z = -1 are consistent and solve them.	L2	CO1	PO1
6	Solve the system of equations using gauss seidel iteration method 10x+y+z=12, 2x+10y+z=13, 2x+2y+10z=14	L1	CO1	PO1
7	Solve the system of equations 2x-y+3z = 0, 3x+2y+z=0 and x-4y+5z=0 .	L1	CO1	PO1
8	Define Rank and Find the rank of the matrix A=$\begin{pmatrix} 2 & 1 & 3 & 5 \\ 4 & 2 & 1 & 3 \\ 8 & 4 & 7 & 13 \\ 8 & 4 & -3 & -1 \end{pmatrix}$ by echelon form	L2	CO1	PO2
9	Solve the system of equations x+2y+3z=1,2x+3y+8z=2, x+y+z=3	L1	CO1	PO1
10	Find the values of a,b for which the equation x+y+z=6,x+2y+3z=10,x+2y+az=b have i)No solution ii)a unique solution iii)an infinite solutions	L2	CO1	PO2
11	Find the value of k such that the rank of $\begin{bmatrix} 1 & 1 & -1 & 1 \\ 1 & -1 & k & -1 \\ 3 & 1 & 0 & 1 \end{bmatrix}$ is 2	L1	CO1	PO1

FME   Dr. P Mahendra Varma