UNIT-1
MATRICES

Multiple Choice questions

1	The rank of a unit matrix of order "n" is___
	(a)0 (b) 1 (c) 2 (d) n
2	The rank of a matrix $\begin{bmatrix}1 & 1 & 1\\1 & 1 & 1\\1 & 1 & 1\end{bmatrix}$ is _____
	(a)0 (b) 1 (c) 2 (d) n
3.	Rank of a zero matrix of order m is
	(a) n (b) m (c) not defined (d) 0
4.	If a square matrix A satisfies $A^T = A$, then the matrix is
	(a) symmetric (b) orthogonal (c) unitary (d) Hermitian
5	The system of equations AX = B is said to have Unique if ____
	$(a)\ \rho(A) = \rho(A/B)$ (b) $\rho(A) \neq \rho(A/B)$ (c) $\rho(A) = \rho(A/B) < n$ (d) $\rho(A) = \rho(A/B) = n$
6.	If the system of equations $x - 3y - 8z = 0, 3x + y - \lambda z = 0, 2x + 3y + 6z = 0$ possess a nontrivial solution then λ =
	(a)0 (b) -4/9 (c) 6 (d) 8
7	The system of equations AX = B is said to have infinite solutions if
	$(a)\ \rho(A) = \rho(A/B)$ (b) $\rho(A) \neq \rho(A/B)$ (c) $\rho(A) = \rho(A/B) < n$ (d) $\rho(A) = \rho(A/B) = n$
8.	The equations x + 4y + 8z = 16, 3x + 2y + 4z = 12 and 4x + y + 2z = 10 have
	a) only one solution b) two solutions c) infinitely many solutions d) no solutions
9	If the matrix $A = \begin{bmatrix}1 & 2 & 4\\2 & 0 & -1\\a & b & 5\end{bmatrix}$ is symmetric, then the values of a, b____
	(a)-1, 4 (b) 2, -1 (c) 1, 5 (d) 4, -1

10.	Rank of a nonsingular matrix of order m is
	(a) 1 (b) m (c) 3 (d) 4
11.	The system of equations $x_1+x_2+2x_3=1$, $x_1+2x_2+3x_3=2$, $x_1+4x_2+\alpha x_3=4$ has α unique solution the only possible values of α are
	(a) 0 (b) either 0 or 1 (c) one of 0,1, or -1 (d) any real number
12.	Rank of the matrix is $A=\begin{bmatrix}1 & 1 & 1\\ 1 & -1 & 0\\ 1 & 1 & 1\end{bmatrix}$
	(a) 1 (b) 2 (c) 3 (d) 0
13.	For matrices of same dimension A and B and a scalar k which of these properties does not always hold
	(a) $(A^T)^T = A$ (b) $(kA)^T = kA^T$ (c) $(A+B)^T = A^T + B^T$ (d) $BA = AB$
14	If 5 non homogeneous equations are given with 4 unknowns. The system of equations AX=B consistent if
	(a) The rank of A≤4 (b) the rank of A is 3 (c) the rank of A> 4 (d) the rank of A is 5
15	The system of linear equations $\begin{pmatrix}2 & 1 & 3\\ 3 & 0 & 1\\ 1 & 2 & 5\end{pmatrix}\begin{pmatrix}x\\ y\\ z\end{pmatrix}=\begin{pmatrix}5\\ -4\\ 14\end{pmatrix}$ has
	(a) A unique solution (b) infinitely many solutions (b) No solution (d) exactly two solutions
	Fill in the blanks
1.	The rank of $\begin{pmatrix}1 & 2 & 3\\ 0 & -3 & 2\\ 0 & 0 & 5\end{pmatrix}$ is _____
2.	The necessary and sufficient condition that the system of equations AX=B is inconsistent if_____
3.	If the rank of a matrix is 4. Then the rank of its transpose is_____
4.	In Gauss-seidel method the diagonal coefficients are not zero and large compared to other coefficients such a system is called ----------_____
5	The norma form a matrix is _____
6	The value of k for which the system of equations 5x+3y=12, 15x+9y=k-3 has infinitely many solution is _____

7	If A is orthogonal then A^{-1}= _____
8	If A is 2x2 non-singular matrix , then its rank is ----------
9	If the rank r is equal to n, the no. of variables for the system AX= B, the system will have _____
10	The maximum value of the rank of a 4×5 matrix is _____
11	The rank of a unit matrix of order '9' is _____
12	$If\ A = \begin{bmatrix} 1 & 2 \\ 3 & 7 \end{bmatrix}$, Find $A^{-1} =$ _____
13	The rank of a singular matrix of order n is _____
14	The rank of the matrix A = $\begin{bmatrix} 5 & 10 & 10 \\ 1 & 0 & 2 \\ 3 & 6 & 6 \end{bmatrix}$ is _____
15	The system of equations $\boldsymbol{x + y + z = 3, x + 2y + 3z = 4, x + 4y + 9z = 6}$ will have ____