

CLASS : XIIth DATE : SUBJECT : MATHS DPP NO. : 3

Topic :-MATRICES

1. If A and B are matrics such that AB and A + B both are defined, then a) AandB can be any two matrices b) AandB are square matrices not necessarily of the same order c) A, Bare square matrices of the same order d)Number of columns of A is same as the number of rows of B 2. Let *a*, *b*, *c* be any real numbers. Suppose that there are real numbers *x*, *y*, *z* not all zero such that x = cy + bz, y = az + cx, and z = bx + ay have non-zero solution. Then, $a^2 + b^2 + c^2 + 2 abc$ is equal to a) 1 b)2 c) -1 d)0 3. If I_n is the identity matrix of order *n*, then rank of I_n is a) 1 b)*n* c) 0 d) None of these If the matrix $A = \begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & \lambda \end{bmatrix}$ is singular, then λ is equal to 4. d)5 a) 3 c) 2 5. If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, then $I + A + A^2 + A^3 + \dots \infty$ equals to a) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ b) $\begin{bmatrix} -1 & -2 \\ -3 & -4 \end{bmatrix}$ c) $\begin{bmatrix} 1/2 & -1/3 \\ -1/2 & 0 \end{bmatrix}$ d) $\begin{bmatrix} -1/4 & 1/3 \\ 1/2 & 0 \end{bmatrix}$ 6. If *A* is a non-singular square matrix of order *n*, then the rank of *A* is a) Equal to n b) Less than *n* c) Greater than n d) None of these 7. If $A = \begin{bmatrix} 1 & -2 \\ 4 & 5 \end{bmatrix}$ and $f(t) = t^2 - 3t + 7$, then $f(A) + \begin{bmatrix} 3 & 6 \\ -12 & -9 \end{bmatrix}$ is equal to a) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ b) $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$ c) $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$ d) $\begin{bmatrix} 1 & 1 \\ 0 & 0 \end{bmatrix}$ 8. The system of linear equations x + y + z = 22x + y - z = 33x + 2y + kz = 4 has a unique solution if b) -1 < k < 1 c) -2 < k < 2a) $k \neq 0$ d)k = 0

9. The number of solutions of the system of equations 2x + x = 7 - x = 2x + 2z = 1 - x + 4x = 2z = 5			
$\begin{array}{c} x - y - z = 7, x - 3y + 2z \\ a \end{array}$	z = 1, x + 4y - 3z = 51s b) 1	c) 2	d)3
If $X = \begin{bmatrix} 3 & -4 \\ 1 & -1 \end{bmatrix}$, the value $\begin{bmatrix} 3n & -4n \\ n & -n \end{bmatrix}$	the of X^n is equal to b) $\begin{bmatrix} 2+n & 5-n \\ n & -n \end{bmatrix}$	c) $\begin{bmatrix} 3^n & (-4)^n \\ 1^n & (-1)^n \end{bmatrix}$	d)None of these
If I_3 is the identity matr a) 0 sts	Fix of order 3, then $(I_3)^{-1}$ b) 3 I_3	$I^{1} = C I_{3}$	d)Not necessarily
If $A = [a_{ij}]$ is a square a a) $k^n A $	matrix of order $n imes n$ an b) $k A $	d <i>k</i> is a scalar, then <i>kA</i> c) <i>kⁿ⁻¹ A</i>	= d)None of these
If $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ a & b & -1 \end{bmatrix}$, the a) Null matrix	n A ² is equal to b) Unit matrix	c) – <i>A</i>	d) <i>A</i>
If $A = \begin{bmatrix} \alpha & 0 \\ 1 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} a \\ a \end{bmatrix}$ 1	$\begin{pmatrix} 1 & 0 \\ 5 & 1 \end{pmatrix}$, then value of α fo b) -1	r which $A^2 = B$ is c) 4	d)No real values
If <i>A</i> is a square matrix s a) 4	such that A (adj A) = $\begin{bmatrix} 4 \\ 0 \\ 0 \end{bmatrix}$ b) 16	$\begin{bmatrix} 0 & 0 \\ 4 & 0 \\ 0 & 4 \end{bmatrix}$, then $ adj A =$ c) 64	d)256
If ω is a complex cube $\omega^2 A$	root of unity and $A = \begin{bmatrix} \alpha \\ 0 \end{bmatrix}$ b) ωA	$\begin{bmatrix} 0 & 0 \\ \omega \end{bmatrix}$, then A^{50} is c) A	d)0
If $A = \begin{bmatrix} 1 & 2 & x \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ and B a) 0	$ = \begin{bmatrix} 1 & -2 & y \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \text{ and } AB $ b) -1	$= I_3$, then $x + y$ equals c) 2	d)None of these
The adjoint of the matr a) $\begin{bmatrix} \cos \theta & -\sin \theta \\ \sin \theta \cos \theta \end{bmatrix}$	$ \begin{bmatrix} \cos \theta & \sin \theta \\ -\sin \theta \cos \theta \end{bmatrix} $ is $ \begin{bmatrix} \sin \theta & \cos \theta \\ \sin \theta & \cos \theta \\ \\ \cos \theta \sin \theta \end{bmatrix} $	c) $\begin{bmatrix} \cos \theta & \sin \theta \\ -\sin \theta \cos \theta \end{bmatrix}$	d) $\begin{bmatrix} -\sin\theta & \cos\theta\\ \cos\theta\sin\theta \end{bmatrix}$
	Ine number of solut y - z = 7, x - 3y + 2z a) 0 If $X = \begin{bmatrix} 3 & -4 \\ 1 & -1 \end{bmatrix}$, the value a) $\begin{bmatrix} 3n & -4n \\ n & -n \end{bmatrix}$ If I_3 is the identity matrix a) 0 its If $A = \begin{bmatrix} a_{ij} \end{bmatrix}$ is a square of a) $k^n A $ If $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ a & b & -1 \end{bmatrix}$, the a) Null matrix If $A = \begin{bmatrix} \alpha & 0 \\ 1 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} a \\ a \end{bmatrix} 1$ If A is a square matrix solution a) 4 If ω is a complex cube of a) $\omega^2 A$ If $A = \begin{bmatrix} 1 & 2 & x \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ and B a) 0 The adjoint of the matrix a) $\begin{bmatrix} \cos \theta & -\sin \theta \\ \sin \theta \cos \theta \end{bmatrix}$	The number of solutions of the system of eq + $y - z = 7, x - 3y + 2z = 1, x + 4y - 3z = 5$ is a) 0 b) 1 If $X = \begin{bmatrix} 3 & -4 \\ 1 & -1 \end{bmatrix}$, the value of X^n is equal to a) $\begin{bmatrix} 3n & -4n \\ n & -n \end{bmatrix}$ b) $\begin{bmatrix} 2+n & 5-n \\ n & -n \end{bmatrix}$ If I_3 is the identity matrix of order 3, then $(I_3)^-$ a) 0 b) 3 I_3 its If $A = \begin{bmatrix} a_{ij} \end{bmatrix}$ is a square matrix of order $n \times n$ an a) $k^n A $ b) $k A $ If $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ a & b & -1 \end{bmatrix}$, then A^2 is equal to a) Null matrix b) Unit matrix If $A = \begin{bmatrix} \alpha & 0 \\ 1 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 \\ 5 & 1 \end{bmatrix}$, then value of α for a) 1 b) -1 If A is a square matrix such that A (adj A) = $\begin{bmatrix} 4 \\ 0 \\ 0 \\ a \end{bmatrix}$ a) 4 b) 16 If ω is a complex cube root of unity and $A = \begin{bmatrix} a \\ 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$ If $A = \begin{bmatrix} 1 & 2 & x \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -2 & y \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ and AB a) 0 b) -1 The adjoint of the matrix $\begin{bmatrix} \cos \theta & \sin \theta \\ -\sin \theta \cos \theta \end{bmatrix}$ is a) $\begin{bmatrix} \cos \theta & -\sin \theta \\ \sin \theta \cos \theta \end{bmatrix}$ b) $\begin{bmatrix} \sin \theta & \cos \theta \\ \cos \theta \sin \theta \end{bmatrix}$	The number of solutions of the system of equations +y - z = 7, x - 3y + 2z = 1, x + 4y - 3z = 5is a) 0 b) 1 c) 2 If $X = \begin{bmatrix} 3 & -4n \\ 1 & -1 \end{bmatrix}$, the value of X^n is equal to a) $\begin{bmatrix} 3n & -4n \\ n & -n \end{bmatrix}$ b) $\begin{bmatrix} 2+n & 5-n \\ n & -n \end{bmatrix}$ c) $\begin{bmatrix} 3^n & (-4)^n \\ 1^n & (-1)^n \end{bmatrix}$ If I_3 is the identity matrix of order 3, then $(I_3)^{-1} =$ a) 0 b) 3 I_3 c) I_3 its If $A = \begin{bmatrix} a_{ij} \end{bmatrix}$ is a square matrix of order $n \times n$ and k is a scalar, then $ kA $ a) $k^n A $ b) $k A $ c) $k^{n-1} A $ If $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ a & b & -1 \end{bmatrix}$, then A^2 is equal to a) Null matrix b) Unit matrix c) $-A$ If $A = \begin{bmatrix} \alpha & 0 \\ 1 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 \\ 5 & 1 \end{bmatrix}$, then value of α for which $A^2 = B$ is a) 1 b) -1 c) 4 If A is a square matrix such that A (adj A) $= \begin{bmatrix} 4 & 0 & 0 \\ 0 & 4 & 0 \\ 0 & 0 & 4 \end{bmatrix}$, then $ adj A =$ a) 4 b) 16 c) 64 If ω is a complex cube root of unity and $A = \begin{bmatrix} \omega & 0 \\ 0 & \omega \\ 0 & 0 & 4 \end{bmatrix}$, then $ adj A =$ a) $\omega^2 A$ b) ωA c) A If $A = \begin{bmatrix} 1 & 2 & x \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -2 & y \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ and $AB = I_3$, then $x + y$ equals a) 0 b) -1 c) 2 The adjoint of the matrix $\begin{bmatrix} \cos \theta & \sin \theta \\ -\sin \theta & \cos \theta \end{bmatrix}$ is a) $\begin{bmatrix} \cos \theta & -\sin \theta \\ \sin \theta & \cos \theta \end{bmatrix}$ b) $\begin{bmatrix} \sin \theta & \cos \theta \\ \cos \theta & \sin \theta \end{bmatrix}$ c) $\begin{bmatrix} \cos \theta & \sin \theta \\ -\sin \theta & \cos \theta \end{bmatrix}$

19. The inverse matrix of
$$A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}$$

a) $\begin{bmatrix} \frac{1}{2} - \frac{1}{22} \\ -4 & 3 - 1 \\ \frac{5}{2} - \frac{31}{22} \end{bmatrix}$ b) $\begin{bmatrix} \frac{1}{2} - 4 & \frac{5}{2} \\ 1 & -6 & 3 \\ 1 & 2 - 1 \end{bmatrix}$ c) $\frac{1}{2} \begin{bmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \\ 4 & 2 & 3 \end{bmatrix}$ d) $\frac{1}{2} \begin{bmatrix} 1 & -1 & -1 \\ -8 & 6 & -2 \\ 5 & -3 & 1 \end{bmatrix}$
20. If $f(\theta) = \begin{bmatrix} \cos \theta & -\sin \theta & 0 \\ \sin \theta & \cos \theta & 0 \\ 0 & 0 & 1 \end{bmatrix}$, then{ $f(\theta)^{-1}$ } is equal to
a) $f(-\theta)$ b) $f(\theta)^{-1}$ c) $f(2\theta)$ d) None of these