



Time: 2 hours

Math | IIT-JEE

Marks: 50

(Matrices)

NAME OF THE STUDENT:- _____

DATE:- _____

INSTRUCTION – ATTEMPT ALL QUESTIONS

Q.1. Construct a 3×2 matrix whose elements are given by

$$a_{ij} = \frac{1}{2} (i - 2j)^2$$

Q.2. Construct a 2×3 matrix whose elements are given by

$$a_{ij} = \frac{1}{2} i - 3i + j.$$

Q.3. If $\begin{bmatrix} x + 2y & -y \\ 3x & 4 \end{bmatrix} = \begin{bmatrix} -4 & 3 \\ 6 & 4 \end{bmatrix}$, find the value of x and y .

Q.4. Find the value of x and y , if

$$2 \begin{bmatrix} 1 & 3 \\ 0 & x \end{bmatrix} + \begin{bmatrix} y & 0 \\ 1 & 2 \end{bmatrix} = \begin{bmatrix} 5 & 6 \\ 1 & 8 \end{bmatrix}$$

Q.5. If $x \begin{bmatrix} 2 \\ 3 \end{bmatrix} + y \begin{bmatrix} -1 \\ 1 \end{bmatrix} = \begin{bmatrix} 10 \\ 5 \end{bmatrix}$, find the value of x and y .

Q.6. If $\begin{bmatrix} x & 3x - y \\ 2x + z & 3y - w \end{bmatrix} = \begin{bmatrix} 3 & 2 \\ 4 & 7 \end{bmatrix}$, find the value of x, y, z, w .

Q.7. If $\begin{bmatrix} x & 6 \\ -1 & 2w \end{bmatrix} + \begin{bmatrix} 4 & x + y \\ z + w & 3 \end{bmatrix} = 3 \text{I} \begin{bmatrix} x & y \\ z & w \end{bmatrix}$, find the value of x, y, z, w .

Q.8. If $A = \text{diag} (3 -2 5)$ and $B = \text{diag} (1 3 -4)$ Find $(A+B)$.

Q.9. Show that $\cos \theta \cdot \begin{bmatrix} \cos \theta & \sin \theta \\ -\sin \theta & \cos \theta \end{bmatrix} + \sin \theta \begin{bmatrix} \sin \theta & -\cos \theta \\ \cos \theta & \sin \theta \end{bmatrix} = \text{I}$.

Q.10. If $A = \begin{bmatrix} 1 & -5 \\ -3 & 2 \\ 4 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 1 \\ 2 & -1 \\ -2 & 3 \end{bmatrix}$, Find the matrix C such $A + B + C$ is a zero matrix

